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MONTHLY REPORT

OF

THE DEPARTMENT OF AGRICULTURE,

FOR

MARCH AND APRIL,

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MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,
Washington, D. C., April 30, 1870.

SIR: I herewith submit for publication the monthly report of this division for the months of March and April, including a digest of the returns on the condition of winter grains, the condition of farm stock, and the diseases of farm stock during the past year, with extracts from correspondence and articles upon the following topics: agricultural imports of Great Britain; Beet-root sugar; profits of steam-plowing; farming in Aroostook County, Maine; fat steers in New York; the Upper Arkansas Valley; commercial fertilizers in Connecticut; agricultural imports of 1869; exports of Odessa; pomology of Wurtemburg; international exhibition in the Netherlands; cattle plague in Europe; scientific notes on natural history; meteorological tables and notes for February and March, &c.

J. R. DODGE,
Statistician.

HON. HORACE CAPRON,
Commissioner.

CONDITION OF WINTER GRAIN.

The April returns relative to the appearance of winter wheat and rye and other cereals are very complete, and represent every section of the country in which the crops are grown. They picture a small and slow growth, thinned in places by winter-killing, weak and unthrifty in spots from loss of vitality by long exposure under ice or to freezing winds; but, with these exceptions, vigorous, of good color, and ready to start, under the influence of a genial spring, into luxuriant and healthful growth. These blemishes are neither general nor very marked in localities where they appear, with occasional exceptions of severe freezing. While the appearance of wheat is by no means as promising as it was last year, the difference is due more to backwardness of growth, caused by late planting followed by an early winter, which allowed of little more than germination before cold weather set in, than to injuries from freezing. The mild weather and light snows of the winter-wheat region were accompanied with few sudden changes in the earlier winter months, while the colder and rougher weather of later winter was attended with heavier snows, which furnished valuable protection at a critical season.

The regular returns were prepared about the first of April. The tenor of later information gives assurance of a general and rapid amelioration, which may yet result, the season favoring, in a fine crop of winter wheat.

New England.—In the northern part of New England, on the first of April, the winter grain was lying under two feet of snow; another month will better determine how it endures the vicissitudes of early spring. The winter, to that date, had been generally favorable, moderate, and uniform in temperature. In Sagadahoc County, Maine, it was deemed a hard winter for wheat and rye, the protection not being sufficient. In Rockingham, New Hampshire, where the snow had disappeared, the fields were green and promising. In the northern counties of this State, where fall-sowing is scarcely practiced at all, wheat and rye, so far as can be judged, are in excellent condition. The same remark is generally true of Vermont and the southern portion of New England. In only one of the counties of Vermont, Windsor, fears are expressed of injury from icy and insufficient covering of the tender plants. In one county of Connecticut, New Haven, it is understood that some loss had occurred from the open winter; in Tolland the condition of wheat and rye is deemed decidedly better than last year. It should be remembered that these remarks refer to a small area, as New England produces but a small quantity of cereals, and mostly spring grain.

New York.—In more than half the counties a favorable view is taken of the prospect for a crop. In Suffolk, Alleghany, Schuyler, and Cattaraugus the fields are below an average in condition; "backward" in Queens; an "unfavorable winter" in Oneida; "winter-killed" in Chautauqua; "suffered for want of snow" in Westchester; "injured by freezing and thawing" in Genesee; injured in Monroe; an average condition is reported in Dutchess; in Ulster, Rockland, and Steuben it is in "good" condition; "as good as can be" in Rensselaer; "looked well last fall and winter favorable" in Jefferson; "looks well" in Onondaga; "very well" in Kings; and reports of varying tenor come likewise from other counties. It is reported from Columbia that one-sixth of all the tilled land is in rye.

New Jersey.—More than half of the reports from this State are favorable. It was dry during seeding time; cold weather came early, and the winter was changeable, but the extremes of temperature have not been very great, nor the winter-killing either general or disastrously severe. In Union winter grain has been killed to some extent; in Morris and in Sussex injury occurred from freezing and thawing; in Camden and in Salem its condition is below an average; in Hunterdon the drought in the fall, and changeable weather since, have produced some injury; an average condition is reported in Essex, Atlantic, and in Burlington; wheat is a good stand in Bergen, Gloucester, and in Cape May, particularly if early sown; it looks well in Mercer, "but thin owing to drought;" and equally well in Warren. On the whole, circumstances have favored the somewhat unpropitious start in the fall, as the early winter was moderate and favorable, and when freezing and thawing weather came, in the latter part of the season, the surface was generally well protected by snow. Toward the coast, as in Ocean County, this protection was not sufficient; neither winter wheat nor rye looks as well as it did six weeks ago. "The spring has been cold and backward; the young blades are shriveled and jagged. They need the reviving influence of warm, pleasant days and sunshine to change the aspect of our winter-grain fields."

Pennsylvania.—In more than half the counties reported the condition of wheat and rye is placed below the average, not so much from winter-killing as from late germination and unfavorable conditions for growth before winter set in. Injury from freezing and thawing is reported in Chester, Dauphin, Adams, York, Greene, McKean, and Warren; in the latter county, the necessity for draining as a means of exemption from

such injuries is reported. It is significantly hinted by the Montgomery reporter that wheat looks well where it was put in well. It is also noticeable that it is not injured in limestone districts, while in poorer slate soils and in low lands it is more or less winter-killed. While it is not so good as usual in Mercer, there appears to have been more than usual sown. It presents a fair appearance in Clearfield, Elk, and Franklin; is "unusually fine" in Fayette; fine in Indiana; late, though not an average, in Westmoreland and Somerset; winter-killed in Cumberland; thin and poor in Armstrong, Lancaster, Lebanon, Beaver, Erie, Forest, Lehigh, and Lawrence.

Delaware.—Wheat was sown late, much of it upon corn stubble, according to prevailing practice, and obtained small growth before winter, yet it looks well. Some injury from freezing and thawing is reported in New Castle.

Maryland.—Wheat is backward and thin in Montgomery, Howard, Harford, and Kent. It "begins to grow and look healthy" in Washington; it is "small but healthy" in Baltimore; late, though "some fields look well," in Cecil; "good" in Prince George's; "excellent" in Anne Arundel; "looks well in well-drained fields" in Queen Anne. In some level clay soils the plant was drowned or frozen out; a smaller quantity of fertilizers than usual has affected growth in many places; and the cold autumn was a disadvantage that was general.

Virginia.—Forty-two counties in this State report upon the condition of winter grain. The general tenor of returns is favorable. A condition "below an average" is given in Montgomery, Lancaster, Albemarle, Patrick, Cumberland, Greene, Henry, and Loudon. As in other States, the words, "good where fertilized," attest the necessity of manuring; and it is equally true in this region that "drilled wheat is good, broadcast poor." The Clarke correspondent says that since the introduction of the drill he has never observed so marked a difference. The plant is weak in Rockbridge, "but will improve with good weather." Twenty per cent. is reported winter-killed in Patrick, ten per cent. in Northampton, and to some extent in Fairfax. In Nelson the soil was badly prepared, and the prospect is not promising; in Tazewell wheat is not so good as last year; in Bath "worse than for years;" "not so forward" in Washington; while in Pulaski "it is as good as could be expected." An average condition appears in Botetourt, Bland, Middlesex, King George, King William, York, Smyth, and Lee. "It is better than last year" in Northampton; "better than usual" in Wayne; "very promising" in Roanoke; "in fine condition" in Scott; "looking well" in Gloucester; "remarkably well" in Highland; "very finely" in Henrico; and "in excellent condition" in Buckingham. In the latter county it was seeded late, and much of the land was hurriedly and badly prepared. Many of the counties of Virginia could give the report received from Spottsylvania: "the wheat crop was put in late last fall and made a poor show up to the first of January, but the very mild weather in January gave it such a start that it now presents a finer appearance than for many years."

North Carolina.—But four of forty-two counties making returns represent the condition of wheat below an average, viz: Bertie, Gaston, Jackson, and Randolph. Among the counties in which winter cereals "look well," or appear to be in an average or "good" condition, are Alexander, Beaufort, Chowan, Camden, Currituck, Davidson, Franklin, Guilford, Granville, Gates, Harnett, Macon, Mecklenburg, Moore, Surry, Stokes, and Yadkin. It is reported "promising" in Burke, Caswell, Duplin, Person, and Wake. It is better than usual in Montgomery, Rowan,

Perquimans, Rutherford, Stanley, and Wilkes; "very fine" in Orange; "better than for years" in Columbia and in Chatham; over an average in Greene; never better in Madison and in Sampson, and one-third more grown; and favorable returns come from Martin, Lenoir, and Greene.

South Carolina.—Wheat has an unpromising appearance in Lexington and York; looks well in Abbeville; very well in Marion and Orangeburg; unusually fine in Greenville; nearly fifty per cent. better than an average in Spartanburg; promising in manured clay lands in Newburg; better than usual in Williamsburg; and shows a good color in Richland.

Georgia.—Forty counties in Georgia have made reports of the condition of winter grain, of which but six represent the crop as unpropitious in appearance, viz: Clayton, Chattanooga, Macon, Meriwether, Laurens, and Towns. As elsewhere, there is much that is small but healthy and standing well. There is some evidence of winter-killing in places, and a diminished area in others, in consequence of the expense of fertilizers, as in Hancock, is indicated, while in Decatur more than usual was sown. In Murray it was as "good as for ten years past;" in Columbia "better than for years." The crop generally appears "promising," "better than usual," or "an average," as in Butts, Bartow, Coweta, Cobb, Decatur, Effingham, Fulton, Floyd, Gilmer, Greene, Heard, Johnson, Newton, Oglethorpe, Pike, Pulaski, Putnam, Pickens, Richmond, Stewart, Sumter, Taylor, Talbot, Terrell, Troup, Walton, and Walker. The correspondent in Carroll County says: "On account of the cold and wet winter in March, the wheat, as a general thing, looks poor and backward; but the Tappahannock wheat, obtained from the Department of Agriculture, so far excels all other kinds that it will eventually be the only kind sown."

Alabama.—This State is less extensively engaged in wheat-growing than Georgia. In most of the counties the business is almost unknown. The little that is sown looks well, with few exceptions; wheat is backward on account of cold weather in Jefferson, poor in Lawrence County, but better than for many years in Perry; a good stand of small plants in St. Clair, and presenting a fair appearance in Butler, Clay, Etowah, Sumter, and Tallapoosa.

Mississippi.—Less than usual has been sown in Mississippi, and few counties regard it as one of their industries. In Neshoba the crop has an unpromising appearance, and in Carroll it looks worse than usual, while in Attala, De Soto, Kemper, Lafayette, Rankin, and Winston a fair appearance is presented.

Louisiana produces scarcely wheat enough to permit a mention of its appearance.

Arkansas.—The crop generally looks well, where found at all. A greater breadth than usual was sown in Washington; a smaller area in Columbia. With some variety, a fair average is reported from most of the counties in which wheat is grown.

Texas.—There appears to be little disposition to produce wheat where cotton can be grown. Though the northern portion of Texas is admirably adapted to this cereal, it is comparatively little grown at present. Drought interfered with its growth in many places where sown; it is noted as below an average in Anderson and Gillespie and Forsyth; while in Travis it was better than for years; in Coryell above an average, and looking well in Blanco, Ellis, Gillespie, Lamar, Red River, and Rusk.

Tennessee.—There are few counties in Tennessee unable to give a favorable account of the winter grain, and among these are Dyer, Fayette, and Greene. In Sumner winter rye looks well, though the wheat

is poor; it is late and somewhat thin in Weakley; in Sullivan, though small, it stands well; is backward, with a good stand, in Montgomery and in Robertson; and is "decidedly good" in Sevier, and "excellent" in Williamson. Among the counties where "above the average" is reported, or a fine stand, are Anderson, Campbell, Davidson, Dyer, Hawkins, Jefferson, Lauderdale, Monroe, Obion, Polk, Rhea, Smith, and Union.

Kentucky.—More than forty counties are reported, in this State, favorably, with few exceptions, as in Butler, Calloway, McCracken, Gallatin, and Livingston, where some complaints of winter-killing are made, and in Trimble, where it is "not so good as last year." In Carroll the plant looks well, except in unfavorable situations, where it was injured by freezing, as it was to some extent in Graves, where sown among corn, according to the negligent mode more or less prevalent in the Ohio Valley. It appears "better than for several years" in Henry; "better than for five or six years" in Anderson; "never better" in Jackson and in Russell; "unusually promising" in Hardin, Sherman, and Johnson. In the following counties the condition is placed at above an average: Christian, Jefferson, Fayette, Metcalf, Marion, Shelby, Oldham, Rockcastle, Clark, Clay, Laurel, Scott, Warren, Lincoln, Nelson, Owen, Kenton, Hopkins, Greenup, Herkimer, Pulaski, Whitley, Ohio, Meade, and Boone.

West Virginia.—Sowing was generally late, cold weather came early, and the growth made was small, and in places weak; and winter-killing resulted to some extent. A backward and an inferior appearance was noted in Morgan, Pocahontas, Raleigh, Hardy, Brooke, Hancock, Putnam, and Tucker. A poor start but healthy condition is reported from Harrison; a fair prospect is seen in Hardy, while in the mountain county, Pendleton, wheat never looked better. Fields early sown usually look well. Winter grain generally appears well in Boone, Barbour, Braxton, Berkeley, Cabell, Jackson, Jefferson, Hardy, Kanawha, Lewis, Lincoln, Morgan, Mason, Marshall, Preston, Ohio, Tucker, and Tyler.

Ohio.—A majority of the counties reporting represent wheat and rye as unpromising in appearance, below an average, or "not so good as last year." Still the reports do not indicate disastrous winter-killing, which would render impossible a good crop. Much of the injury mentioned is like that in Butler, of which John M. Millikin says: "Wheat does not look unpromising. It is injured slightly, as in former years." In Medina, where it was much frozen, dry uplands look well; a disposition to plow up wheat fields seems to exist in Mercer and in other counties, as in Miami, Clermont, and Montgomery; the loss from freezing did not occur till March. One cause of inferior condition was late sowing, as the early sown almost invariably appears well. The season was extremely unpropitious for seeding and early growth; very wet weather prevailed in southern Ohio early last summer; later a severe drought rendered the soil extremely hard, and plowing difficult and late, giving no time for seeding till October, when cold weather shortly set in, in some instances before germination had visibly progressed. It is also noted here, as elsewhere, that drilling, generally, insured a good stand; in Morrow "drilled wheat looks one hundred per cent. better than sown." The plant did not come up well in Defiance; and in Hardin that which was covered light was lost by sprouting and drying, or "damping off." But half a stand is reported in Shelby; and in Marion, as is claimed, it has not been worse in ten years. Other counties making comparatively unfavorable returns are Athens, Berg, Carroll, Columbiana, Clinton, Coshocton, Drake, Green, Huron, Lawrence, Lorain,

Logan, Ottawa, Portage, Putnam, Tuscarawas, Union, Washington, Williams, Wayne, and Wyandot. Though injured in Fayette, it looks well; it is thin in Auglaize, but healthy; injured in Geauga, but the spring has been favorable; damaged somewhat by fly and frost in Fairfield, but looking well; above the average in Warren, but not so good as last year; small, but not winter-killed, in Lucas; looks well in Champaign, except that which was late sown. While much complaint is made, the injury is generally of such a character as to be remedied by the favorable weather in April and May; and later reports indicate that April has brought much of recuperation in its genial weather.

Michigan.—A majority of the counties of Michigan report favorably. Several experienced the effects of freezing and thawing weather, of ice on flat, bare surface, and the disadvantage of late sowing was quite general. The worst winter-killing appears in Montcalm, Barry, Hillsdale, Van Buren, Calhoun, and Livingston; and in Oakland, "the poorest show for thirty years." It is reported small but healthy in Lapeer, Genesee, Tuscola, Antrim, and Jackson. It is represented in excellent condition in Leelenaw, and makes a good appearance in Sanilac, Alpena, Monroe, Calhoun, Cass, and Macomb. On the first of April it was covered with snow in many sections; in Emmet, to the depth of three feet.

Indiana.—A general return from this State indicates a condition below the average in a majority of the counties. Defective stands, from freezing and other causes, to the extent of one to three-tenths, are frequent; and "poor," "much winter-killed," "not so good as usual," and similar expressions, characterize twenty to thirty of the returns. Injury by a "grub worm" is noted in Union; and "injured in the fall, not winter-killed," is reported from Kosciusko. In Fayette, where the condition of wheat is unfavorable, it "is not so bad as in 1868." Wheat looks well on rich sandy loam in Warsaw, and is poor on clay soil. It is "better than last year" in Spencer, and better than was expected in Pike. On the whole, the injuries are mainly such as are reparable by due proportions of rain and showers during the spring months. The Warren correspondent says: "In the spring of 1864 the appearance was most unfavorable up to the 1st of May, and that year we had the best wheat crop that I have seen during a residence of over forty years in this neighborhood."

Illinois.—The planting was late, the ground, too, generally badly prepared, germination, therefore, irregular, and the winter coming earlier than usual, a poor show of weak plants too often resulted. Under such circumstances, the freezing and thawing of a comparatively open winter was somewhat disastrous. Yet there were farmers who got in their winter grain early on well-prepared land, and some of them upon soil well drained, either naturally or by artificial means, and the result, despite the changes of an open winter, was seen in green and vigorous wheat. Fields that were manured were also exempt from the ravages of the frost king. These suggestive facts appear year by year, and it is a pity that such hints are not more generally taken by the farmers. Among the counties in which wheat is unfavorably reported are Green, Madison, Gallatin, Peoria, Adams, Crawford, Edwards, Tazewell, Hancock, Kendall, Marion, Clay, Effingham, Fulton, Macoupin, Pope, Sangamon, Schuyler, Tuscola, Grundy, Knox, Menard, Randolph, St. Clair, Wayne, Vermillion, and Clinton. In many of these counties later reports indicate an improving condition, and they may yet yield an average crop. In Pike County wheat is fine on new lands and bottoms; in Pope, good on fresh land or manured fields. The best farmers prophesy an improving prospect as spring advances. One correspondent refers to his expe

rience, showing that some of the largest crops produced were from late and partially winter-killed fields. One writes as follows: "Winter wheat has looked very badly indeed until within the last four weeks, during which time it has improved remarkably. Many farmers, in answer to my inquiries concerning wheat, have assured me that no correct opinion could be formed concerning it till the spring was fully opened. The prospect is now decidedly encouraging for an average crop."

Doctor G. L. Owen, writing from Williamson, says:

I am sorry to have to report the condition of winter wheat as being on the whole very unpromising. On land not exhausted by incessant cropping, and where the seed was sown by the 20th of September, wheat looks nearly as well as in average years; but on worn out soils, and on flat, undrained lands, the prospect is gloomy. There is, however, a great breadth of land sown, and we expect to make up in number of acres what we lose in fertility of soil. The fact is, until farmers understand how to cultivate winter wheat better than the majority do at present, or until a better system is adopted than is generally practiced, it is in vain to expect good crops of wheat; for we shall continually be disappointed. Year after year farmers sow wheat, and year after year a great many fail, or only succeed in raising small crops, say from six to ten bushels per acre; always and persistently attributing their failure to any and everything rather than to its true cause. When will farmers learn that the wheat plant cannot grow and yield sound grain in a soil exhausted of all those elements which are essentially necessary to its healthy growth; for such is already the condition of most of our lands that have been in cultivation for the last fifteen or twenty years. Incessant cropping with corn, wheat, and oats, to the exhaustion of the grasses, and the annual burning of the straw, have already done their work of destruction; and farmers are wanting to sell their worn-out lands to remove further West, again to carry on the same system of cropping and exhaustion by which they have been enabled to despoil so many valuable acres of God's creation.

The cultivation of the grasses, including clover, combined with the rotation of crops, are the only means whereby the farmers of this portion of Illinois can improve their lands in a reasonable time. All the manure we can make upon our farms amounts to very little in comparison to the benefit our lands would derive from a judicious rotation of crops, aided by the cultivation of the grasses. But for the want of a more practical knowledge of this subject, a great many fail in their attempts to carry out some system. Allow me to suggest the following system of rotation as peculiarly applicable to this portion of Illinois, premising that no system of rotation will be generally adopted that does not admit of the cultivation of double the amount of Indian corn to any other one product. In the first place, a farm should be divided into several fields, of as near an equal size as possible. The fields should be numbered one, two, three, and so on. Beginning with corn, the first and second fields should contain corn; the third field should rest in fallow, and be sown to winter wheat by the 20th of September. After the wheat is harvested, the ground should be properly prepared and sown with eight quarts of timothy to the acre, not later than the 15th of September. About the middle of March following four quarts of clover seed to the acre should be sown and carefully rolled in. The following summer a good crop of timothy hay may be reasonably expected. A second crop of timothy and clover may be cut the second summer; afterward the field may be pastured one or more years, according to the number of fields the farm is divided into, when it may be thoroughly plowed in the fall, inverting the sod, preparatory to being again planted to corn the following spring.

Wisconsin.—Very little winter grain is sown in this State. The returns concerning that little are favorable, without exception—the early sown being particularly fine. The correspondent for Fond du Lac County makes the following suggestions:

Heretofore the West has had poor crops after a wet season. Last summer and fall was very wet up to the commencement of winter. Snow came on with just frost enough to retain the moisture. What little frost there was was soon drawn out by the snow, of which we had in all three feet and ten inches, intermixed with nearly three and a half inches of rain. The snow has melted away gradually, but nearly all the water remains in the soil, so that it is saturated to its utmost capacity. The spring must be late. Then, again, only about two-thirds of the plowing was done last fall, which makes the sowing still later. Wheat and oats do very poorly on spring plowing. And, again, the extremely low price of wheat will cause many acres to lie idle. Money is scarce to employ help to perform labor, with the prospect of not getting our money back. And, again, farmers are changing from every branch of agriculture to cheese-making. Not less than ten cheese factories are growing up in our county, in addition to the eight already in existence. All these considerations suggest that it would be well not to waste or part with our large surplus of wheat at prices less than cost.

Minnesota has too little winter grain to render necessary a special report.

Iowa has scarcely a tenth of her wheat area occupied by the winter variety. Little complaint is made of winter-killing or low condition, and an average prospect appears to be indicated.

Missouri.—In many of the counties reported wheat is looking well. Some complaint of freezing is made. In Lewis three-fourths is killed; in Vernon it is badly frozen out, except where sown early on prairie sod; in Taney, injured by freezing in February and March; there is some injury in Howard, but there is a sufficient stand; in Benton the earth was parched and cracked at sowing, and much of the grain failed to germinate, and it is looking badly. With advancing spring the appearance of fields has greatly improved. There was not so much wheat sown last fall as usual in Lincoln County. "On the first of January it looked moderately well; but alternate freezing and thawing have greatly injured it in prairie sections of the county. It also looks badly on timber land, but under favorable circumstances it may yield a good crop." In some prairie fields the wind blew the soil away and exposed the roots. The Hessian fly did some damage in places. Our Cape Girardeau County correspondent says: "Our winter wheat and rye is coming out nicely. A few weeks ago you could scarcely see any wheat in the fields at a hundred yards' distance, but now they look green and very well covered. The present condition is nearly as good as at the same date last year, and much better than the year previous." In Moniteau County, Missouri, winter wheat has looked badly, and farmers were much discouraged about it until within the 20th of March. The winter was long and dry, with little snow, but warm showers are now bringing it out. In St. Genevieve County, Missouri, wheat put in with drill is about as good as usual, but that sowed broadcast is hardly so good.

Kansas.—No State sends more cheering returns than Kansas. Scarcely a complaint appears from any county. Miami has "every reason to expect a bountiful harvest." In Johnson wheat and rye are fine because put in early and almost universally drilled. A great breadth is reported from Linn, "and the growth is very fine." "Not an acre of wheat or rye has been winter-killed" in Sabine, though the plants are not so well grown as last year on account of the dry weather. "Both wheat and rye stand strong and have a vigorous look" in Jefferson, "though there has been no rain for four months, and very little snow." From Franklin it is reported that "there are more good fields of wheat than last year; farms sowed earlier, and the drill is more generally used." In Butler it is said that wheat is suffering from dry weather, no rain having fallen since September last. It is noted in Shawnee that drilled wheat looks much better than sowed. Similar statements are made by other correspondents.

Nebraska.—Winter wheat is little sown in Nebraska. It appears, wherever found, to be in good condition. In Nemaha the abundance of grasshoppers prevented sowing.

California.—The prospect is fine for another good crop in this great wheat-growing State. A comparatively dry winter was feared, but a sufficient rain-fall for a good crop has been enjoyed. In San Joaquin "late rains have saved the crop." In Sacramento it is "much better than last year." In Yuba it "was never better." In Eldorado wheat is fifty per cent. better than usual; barley coming to a head. One-third better than last year in Plumas. In Mendocino it promises to be the best crop ever had; while in Monterey and San Luis Obispo the appearance of wheat is backward and poor.

Oregon.—The returns (which are few from Oregon and irregular in transmission, owing to lack of prompt mail facilities) are generally favorable. Several counties reporting appear to grow little winter wheat. The correspondent for Douglas says: "Winter wheat is in excellent condition where the land is naturally drained, as there is no artificial draining in this county; but on flat, heavy lands, it is drowned out to some extent. I am not aware of any rye being raised in this county this year." The correspondent for Linn County says: "Wheat is at least in ten per cent. better condition than last year. Rye there is none. The months of February, March, and April, up to this writing, have been unusually wet; so much so that no plowing worth naming has been done. The spring sowing must of necessity be late and probably limited."

The Territories.—Where grown the prospect is generally favorable. In Montana spring wheat is generally a more certain crop, though the winter variety at present looks well. It is looking well in Washington Territory. In Utah reports are not uniform, but generally favorable. Correspondents say that winter wheat makes light straw and heavy grain there. Spring wheat *vice versa.*

CONDITION OF FARM STOCK.

The mildness of the winter has been favorable to the health of farm animals, in exemption from the exposure of violent storms and the extremes of temperature, and rendering necessary a smaller consumption of hay and other feed. A very large crop of hay was secured last season, and its excessive production was quite general; the principal exception in quantity being in the drought-parched regions of the Atlantic coast, (the southern portions of which save very little in any season,) and the marked exception in quality, as in that portion of the West which suffered from excessive rain, in the season of growth, as well as curing. Abundance of provender is found to have more to do with good condition of stock than mildness of weather merely.

As heretofore, it is found that the cattle of the more Northern States are in better order than those of the central or southern belts, simply because they are better sheltered and protected from exposure; they are also better fed than those of portions of the central and of nearly all of the Southern States.

No cattle in the country are in a more healthy condition to-day than those of Maine and of Minnesota, and those of New Hampshire, Vermont, Michigan, and Wisconsin, are unsurpassed in that respect by those of any States south of them. They are not only sheltered, cared for, and fed with regularity, but the uniformity of the winter is a stimulant to appetite and conducive to health. In the latitude of the Ohio Valley, cold and warm seasons, snow storms and thaws, ice and mud, are endured in turn, and cattle that are ordinarily very comfortable in the open fields, or in the lee of a straw-stack, are left to stand in pools and mire, or to buffet storms of sleet and biting cold, for many days in every winter. Further south, where the friendly forest furnishes the usual protection, and the green cane-brake both food and shelter, cattle are left entirely to the resources of natural production, and to the protection of the elements. The result is, in exceptionable seasons, and with a surplus of pasturage, fine condition; but, as a rule, owing to deficient forage at some portion of the winter, or to a cold storm of rain

and sleet, or a protracted norther, suffering is experienced, the flesh reduced, and vitality impaired. In proportion as nature is kind, man thus becomes cruel; if his kindly services may, in part, be dispensed with, he becomes totally negligent, and inflicts upon his own pocket losses proportionate to the measure of his own inhumanity and to the sufferings of the dumb creatures that minister to his wants.

A large crop of excellent hay well grown and cured without damage, in the *New England States*, aided by the mild winter weather, has kept the cattle of that region in excellent condition. The reports are all of this tenor, without exceptions sufficiently marked to require notice. The remark of the correspondent of Hillsborough County: "I never knew hay to spend better," is generally applicable; and equally true the suggestion from Coos, that "If there is any trouble with stock, it must be from neglect." "Never looked better," is a common report. A statement from Piscataquis, Maine, giving, as one cause of superior condition, the acknowledged fact that "farmers generally take better care of stock than formerly in this county," has, properly, a more general application.

In the *Middle States* farm stock wintered extremely well. A "surplus of fodder" is reported in many places; "plenty of clover and other hay;" "cattle scarce and fodder plenty." In Hunterdon County, New Jersey, hay was gathered late, with less of nutriment than usual, and the consequence was perceptible in reduced flesh of farm animals. In Warren, Pennsylvania, the crop, though abundant, was also somewhat injured; but adverse returns are rare exceptions.

Stock did well in *Maryland*, generally; to some extent the changeable and stormy weather of March told upon unhoused stock. It is noticed in Baltimore County that cattle are thinner than usual.

Virginia.—Small provision is made for winter supplies of stock in this State. Hay, corn, and fodder are fed to a considerable extent; but most of the sheep, and large numbers of cattle, are left to find their own forage. In Louisa County, according to the returns, "the winter was so warm that the grass scarcely died down, and remained green in many places all the year." "Very many passed the winter in the fields" in Amelia; and in Bath cattle were pastured in the open fields, but are in low condition on account of cold and wet weather. The correspondent from York says: "Cattle are poor, as is always the case in this region, where no hay is raised." In Highland they are "more thrifty than for years;" and the explanatory remark is added "the hay crop is good." Cumberland, Patrick, Clarke, and Smythe make, comparatively, unfavorable reports.

North Carolina furnishes less favorable returns than Virginia. While cattle are thin and poor, quite too generally, it is gratifying to note exceptions, such as the following, in Stanley: "In better condition than usual, from the introduction of clover lots and meadows."

South Carolina.—In Marion County "cattle have suffered severely from last year's failure of crops; are very poor; large numbers may die before the woods afford sufficient pasture."

In *Georgia*, the drought of last season reduced both summer and winter supplies, which were supplemented, to some extent, by increased stores of cotton-seed. The latter part of winter was cold, increasing the discomfort and sufferings of farm animals. Scarcely an average condition of stock can, therefore, be claimed in this State. The Carroll correspondent says: "Owing to the cold, wet winter, and spring so far, cattle are in a very poor condition. Grass and vegetation are almost one month later."

Alabama.—The cattle in this State are generally reported in poor condition. The "short commons" resulting from drought last summer, and the cold and wet weather of the latter part of winter, have left farm animals more unthrifty than unusual. An exception is named in Butler, where "milch cows are taken care of."

Similar reports come from *Mississippi*, mollified by a few exceptional statements, as in Washington and the regions of the Mississippi bottoms.

Louisiana makes returns of average condition for the spring season. "Cows kept for milking, and regularly fed, look well."

From *Texas* returns are favorable, with very few exceptions; "unusually good" is a common report. In De Witt "many are fat enough for beef." The Medina correspondent says, "Several good rains in November gave the grass a new start before winter set in, the latter part of December, affording a better winter feed than usual; the winter has, besides, been mild and short. Cattle came out of winter quarters in a somewhat better condition than an average."

Arkansas and *Tennessee* send conflicting reports. In some places scarcity of fodder is mentioned, and the fact is noted that cattle are in a poor condition; in other sections there is abundance, and cattle nearly fat enough for beef. A fair average may be assumed.

Sheep have generally wintered better than cattle throughout the Southern States; they accept a greater variety of food, and will often grow fat where neat cattle will starve.

Kentucky reports her stock in average condition.

In *West Virginia* stock generally looks well. A few exceptions are noted. In Berkley, their poor condition is attributed to moldy corn-fodder; in Jefferson, to scarce pasturage in consequence of drought. The following, from the mountain county of Pendleton, speaks well for the capabilities of this State: "Cattle have come out of winter quarters in fine condition. I have wintered one hundred head of stock cattle, and have never known them to come out better. Cattle are our great resource; everybody handles more or less cattle." In Boone, "sheep have generally run at large in the mountains all the winter, except ewes; they are taken in a short time before the season for lambs. Sheep do better out than in, as far as they have been tried, in small flocks—say not over one hundred in number—in winter. They can find food sufficient to keep in good condition. Sheep are never diseased."

Ohio.—Reports from most of the counties are favorable. In Vinton, where it is said there was not a period of thirty-two hours without a change of weather in the early part of winter, cattle are thin; in Champaign, wet weather and poor feed were unfavorable; in Fayette and Ross similar complaints are made.

Indiana.—The condition of farm stock may be placed at a full average. A few counties, as Elkhart, Noble, Steuben, and Kosciusko, report cattle thin and poor; in the latter it is mentioned that wheat has been fed to stock considerably, but that it is not equal to corn for that purpose.

Illinois.—A similar statement may be made of this State. Cows appear to be in better order than usual in localities where cheese factory enterprises are flourishing, where they receive better care. In Rock Island a lack of nutriment in hay is given as a cause of poor condition; in Warren, cattle have wintered badly; and in Cook, Fayette, and Gallatin, reports are unfavorable; while Marshall, among other counties, never wintered stock in better order. The correspondent from Williamson says: "Cattle are coming out of their winter quarters in rather poor condition, thinner in flesh, upon an average, than they were a year ago.

Owing to the prolonged drought of last summer, and to the very early frosts which damaged almost all our corn, farmers generally have been very short of feed; and where feed is scarce cattle and sheep are usually put upon short rations; very few deaths have occurred, and as spring is at hand, and cattle will live on the range in two or three weeks, we are expecting to have a surplus during the summer and fall. Cattle are quite numerous in this county, and rapidly on the increase."

Michigan has wintered her stock well. Condition, as elsewhere, appears to be measured by quantity and quality of feed, as in Montcalm, "cattle were never in better order—there has been plenty of clover and hay;" and in Leelenaw, "poor—early winter prevented the gathering of turnips."

Returns from *Wisconsin*, *Minnesota*, and *Iowa* are extremely favorable, almost without exception. The Humboldt (Iowa) correspondent says: "Feed being plenty and cheap, they have been well cared for, which seems to be all that is required to make the business a success."

Missouri.—The temperature of winter was very equable, with little snow or rain, and farm stock are generally looking extremely well. In Cooper County it is said that "cattle are thin, caused by excessive wheat-raising, and the neglect of corn, hay, and oats."

Kansas.—Cattle are in fine condition in this State. It has been discovered that "good keeping is a cure for almost any ill that cattle flesh is heir to." "Farmers are beginning to see," says one of our correspondents, "that it does not pay to allow a steer to lose two hundred pounds in winter by want of food and shelter." The following exception is noted in Butler: "Almost all the cattle in the county are quite thin. In this, more than in any other county in the State, we depend upon our stock wintering 'on the range.' Last summer we had so much rain that the grass grew very large and coarse, and has not been worth much for winter pasture, and in consequence of the long drought we have no grass yet, which keeps our cattle in winter quarters at least one month longer than usual. This applies to stock in the northern portion of our county.

In *Nebraska*, farm animals have generally wintered well. In Douglas County an exception is mentioned: "In regard to the condition of cattle, I must say that the two great snow-storms of the past season have done much injury. One man in this county tried safely to winter two hundred head of cattle brought from Texas last fall. He lost *one-fourth* of the entire number, and fears that others may die before grass comes. It appears Texas cattle cannot be introduced here in safety. Nearly all poorly-fed and weak cattle have either perished in the two great storms, or are in a fair way to die soon."

California.—In the southern part of the State a severe drought parched the pasturage, and starved the cattle, causing the death of multitudes. One man in San Luis Obispo sent off nine thousand to the foot-hills of the Sierra Nevadas to preserve them from starvation. No rain fell in San Joaquin until the last of February. The northern part of the State had a sufficiency of rain to make the pasturage good, and the stock of the northern counties is therefore in good condition.

The correspondent for Stanislaus County says: "Neither cattle nor sheep require any extra care during the winter months. Part of the dry season, from August to the middle of November, is the most trying on stock, horses, cattle and sheep. After rain has fallen and destroyed the nutritiveness of the dry grass, is the worst time; then stock sometimes suffer; or when rain holds off till very late, as was the case during the latter part of last year and the early part of this. No loss was suffered in this county, but in the counties from one hundred to two hundred

miles south, considerable, say one-tenth, of both cattle and sheep died from want of water and feed. Cattle, in some instances, were sold for five dollars per head, and sheep for fifty cents."

The few returns received from *Oregon* represent farm stock there in an average condition. The correspondent for Linn County says: "Three months of February and March, and the present month, have been unusually wet—so much so, that no plowing worth naming has been done. For the last twenty hours it has rained more than usually hard, and the ground is fully saturated with water. The spring sowing must, of necessity, be late and probably limited. However, the grass for grazing is excellent."

The correspondent of Seattle, Washington Territory, says: "The winter has been mild and open; no snow or cold weather with the exception of about ten days in January, tolerably cold, and a snow storm about the first of March. As a general rule, cattle were not fed at all. None of my own stock, except cows and work-oxen, have had any hay or other feed, and they are in as good condition as those that have been housed and fed on good timothy hay."

The correspondent writing from Kane County, *Utah*, says: "Cattle have come out poorer than for many years before. Cause: last fall (1869) the Navajo Indians made several raids, stealing a large percentage of our horse stock, and killing many cattle for beef. For our own protection, we have been compelled to keep our cattle very close and guard them, and owing to the ravages of the grasshoppers last season, hay was very scarce. These two causes, combined with the fact that this has been our coldest winter, have served to bring our cattle into the spring range very poor."

LOSSES.

Losses from debility, starvation, or neglect have been less than usual during the past year. A smaller loss of lambs occurred last year than is sometimes recorded. A few exceptions are given. The correspondent of Des Moines County, Iowa, says: "In sheep, the loss has been much larger than common. A neighbor told me the other day that he had lost all his last year's lambs, and out of twenty-four dropped this spring he had saved but four, and out of my own flock of thirteen lambs dropped we have saved but three. I estimate the loss at ten per cent."

In Monterey County, *California*, the loss has been twenty times as great as in the preceding year; and in Mendocino it is said, "if any one lost, it is the result of negligence on the part of the herder, or by mere accident."

DISEASES OF FARM STOCK.

DISEASES OF CATTLE.

No prevalent disease has swept away the cattle of any portion of the country during the past year. Isolated cases of mortality occur from a multitude of causes, many of them arising from palpable neglect.

Abortion.—A few cases of abortion are reported in Hillsborough County, New Hampshire; in Essex and Berkshire, Massachusetts; in Otsego, Herkimer, and Ontario, New York; in Westchester, New York, more than usual; in Tompkins, less than usual—the correspond-

ent deprecating the theories assigned as its cause, designed, as he believes, "for the express purpose of concealing the truth," while the real causes ought to be known—but he fails to enlighten the public as to the nature of those causes. The only cases reported in the West are in Warren County, Illinois.

Pleuro-Pneumonia has been the cause of much loss and anxiety in Chester County, Pennsylvania, near Chadd's Ford, on the Octoraro; in Beaver County, Pennsylvania; and in Baltimore, Maryland. Some disease, assumed to be pleuro-pneumonia, exists in Larimer, Colorado. In Washington County, Iowa, a large number of milch cows have been diseased, and ten deaths are reported from "a fever resembling pneumonia."

The correspondent in Bremer County, Iowa, says: "Occasionally there is a case of what is called *blackleg* among young cattle, mostly yearlings, usually in the spring. Pretty thorough bleeding in the neck, on the opposite side to that affected, if not too long delayed, generally effects a cure."

Blackleg is one of the most general of the diseases affecting our cattle. A few cases occur in many localities where its existence is not indicated by our returns. It attacks calves and young cattle mainly, after leaving winter feed for pasturage. Reports of its ravages come from Riley County, Kansas; from Jackson and Pochahontas, Iowa; Meeker and Mille Lac, Minnesota; Larimer, Colorado; and from Perry, Pennsylvania.

Charbon, so severe for several years past in the South, has abated; isolated cases are reported in Tangapaho, Louisiana.

Milk fever has caused some loss in Livingston, Michigan, and in Lorain, Ohio.

Diseases known locally as "murrain," "dry murrain," "bloody murrain," and "staggers," have prevailed to some extent in different parts of the South; but the symptoms are not given with sufficient clearness to enable one to tell the proper name of the disease.

Starvation is the most common as well as most serious malady. Throughout the West and South much fatality should be attributed to exposure and lack of nutrition. In Iroquois, Illinois, one-third of a lot of Texas cattle died.

In Amite County, Mississippi, a disease among cattle has been fatal, commencing with a swelling of the throat.

The correspondent of Greene, New York, says: "There has, to a limited extent, been a few cases, in the northern towns of this county, of what some call 'cow pox;' it consists in the swelling of the limbs, terminates in sores, and often extends to the udder and body. Yielding readily to a few doses of sulphur, with the application of dilute carbolic acid, but cases fatal. Some attribute the cause to the wet season and flies."

SPLENIC (OR SPANISH) FEVER.

The passage of laws to prevent the summer driving of southern cattle, and their strict enforcement, have limited the losses from this disease in a marked degree. A few cases are reported. One in Chester County, Pennsylvania, furnishes another illustration of the invariable and peculiar features of this disease. Last summer a lot of cattle from North Carolina stopped at Avondale. Soon after they left, other cattle turned into the meadow they had occupied became sick. Some twenty were attacked, and about three-fourths of them died. No other cattle were turned into the same inclosure, and the disease did not spread fur-

ther. Many believed the ticks which infested the North Carolina cattle, and were communicated to the natives attacked, caused the disease. There is no evidence that these parasites have anything to do with its diffusion or virulence.

In Franklin County, Georgia, a disease believed to be Spanish fever is reported, but, from the statement given, some other malady is probably indicated: "There has been a disease among cattle that we are not acquainted with. They become stiff in their limbs, move like a horse badly foundered, have a high fever, with a very sore mouth. They nearly all got well, but were left in a poor condition to stand the winter; and we having an unusual hard winter, it has killed perhaps ten per cent. of the cattle in this county."

The correspondent for St. Louis County, Missouri, says: "We had no Spanish fever last year, Texas cattle being effectually excluded by the provisions of our law during the season they would be likely to spread contagion."

The Benton County correspondent says: "There has been no loss by Spanish fever. The vigilance of the people, and stringent legal enactments, have prevented the introduction of, or the transit of, Texas cattle through this county."

From Vernon: "Owing to the stringent laws of this State, but one small drove of cattle direct from Texas succeeded in entering and passing through this county last summer. This drove passed hastily along the east border of this county a short distance, through a district sparsely settled and containing but a few cows, oxen, &c., for home use. The Spanish fever broke out about six weeks after their passage, and continued until after two or three white frosts in October, when it ceased to spread, and those with fever at the time mostly recovered. About forty-four per cent. of the cattle which grazed on the grounds this drove passed over had the fever, two-thirds of which died, the remainder slowly recovering. No other drove is reported as having entered the county till after frost had killed the vegetation. Many thousand then passed through, without a known case of fever."

The Bates County correspondent says: "There has been no Spanish fever. The inhabitants of the county are organized and will not allow cattle to be driven through, although the laws of the State allow them to come in from December to April. I have known of two herds being driven over in the winter—one in 1867, the other in 1869—and in both instances many of the native cattle which came in contact with them died of the disease a short time after grass became a full bite." This instance appears to invalidate the certainty of exemption from infection received through stock introduced from the South in winter.

Last summer tens of thousands of Texas cattle were driven into the southwestern part of Butler County, Kansas. There were but few domestic cattle in that locality, but they all died.

There have been several herds of Texas cattle brought direct during the past winter from Texas and the Indian Territory, pastured and fed in Jefferson, Kansas, among some of which were occasional losses, but none could be clearly charged as Spanish fever. Our correspondent says: "I have wintered (1869) a herd in my pasture in which afterward my Durham cattle fed, and no harm has been witnessed."

The St. Francis correspondent (Arkansas) says: "There has been some Spanish fever in this county, caused by suffering native stock to be penned in lots used by Texas cattle passing through the county; loss very light."

A lot of Texas cattle, brought into Washington County, Virginia,

communicated disease to the native stock, resulting in one hundred and fifty deaths.

In Franklin, Kansas, the splenic fever appeared about the first of September. About one hundred head of native cattle died, mostly cows. The infection was taken from a drove of Texas cattle passing through the county.

It is reported from Shawnee, in the same State, that the disease has not prevailed since the shipment exclusively of Texas cattle by rail from Abilene.

The law preventing the herding of Texas cattle in summer has been generally enforced, so that few points have been infected.

A few cases are reported in Washington County, Nebraska.

The Missouri law has been well enforced; but a few droves went through Greene and Cedar, communicating the disease, which resulted fatally.

While it is admitted that southern cattle, particularly cattle in Texas, are apparently healthy, it is undeniable that when driven north, without external evidences of disease, the cattle communicating with them are almost invariably attacked upon reaching a certain climatic belt, and during a certain period of time thereafter, with a very fatal fever. At the same time it may be true, that this fever gets credit for more than its share of loss. The correspondent in Cherokee, Kansas, speaks warmly on this subject, as follows:

> Everything of which an animal dies is here called Texas fever. Texas cattle are able to run all over the country, with no salt, care or attention, and drink stagnant and slough water heated red-hot in the boiling summer sun; water that is full of leeches and living trash, and without shade on the treeless prairies. People turn out good stock and expect them to thrive like "Texas" cattle, and when they die they call it Texas fever. There have been cases of Texas fever, but it has killed only a small part of the stock that have died. I deem the principal cause of cattle disease the prevalent neglect of cattle in summer, and failure to furnish hay or shelter in winter, though there is a large area belonging to non-residents from which two tons per acre might be cut.

DISEASES OF HORSES.

It is gratifying to note less of prevalent or contagious disease among horses than has been reported in previous years.

More or less fatality from lung fever has existed in the following counties: Oxford, Maine; Penobscot, Maine; Orleans, Vermont; Hunterdon, New Jersey; Adams, Pennsylvania; Kent, Maryland; Huron, Ohio; Story and Hancock, Iowa.

Glanders is reported in the following localities: Beaver, Pennsylvania; Patrick, Virginia; Perry, Alabama; East Feliciana, Louisiana; Plaquemines, Louisiana; Newton, Arkansas; Matagorda, Texas; Sumner, Tennessee; Hall, Nebraska. Some disease, resembling glanders, is noted in Monroe County, West Virginia; Ingham, Michigan; and Merrick, Nebraska. The following extract refers to a similar disease in Atchison, Kansas:

> Several horses and mules have been afflicted with a disease seemingly incurable, so far as the treatment followed or attempted here. The symptoms are a running from the nostrils of a white matter, with some cough, which at times is worse than others; debility without much fever; is contagious, and defies all remedies known by veterinary practitioners. It seems to be akin to the glanders, but still not that disease. Killing the animal has been recommended by good judges.

Diphtheria has prevailed in Chester, Pennsylvania, and Fayette, Kentucky.

Colic is more or less common, but is not so extensively fatal as to require special report. Many losses have occurred in Luzerne, Penn-

sylvania, from colic and ill-treatment; and in the same county, twenty horses died in a mine from some unknown cause. Colic, with ill-usage and starvation, has been fatal in Wilkinson, Mississippi. In Burt, Nebraska, some deaths have occurred from colic, caused by eating green corn and new oats.

In Washington, New York, swelling and stiffness of the joints, sometimes attended with partial blindness, has been a common complaint.

An affection of the kidneys, in Tompkins, New York, has occasioned some loss.

In Clarke, Alabama, horses have been attacked with a swelling under the throat and jaws, extending down the legs, and causing death.

The buffalo fly has caused the death of horses and mules in Lauderdale, Tennessee.

Charbon, so fatal in the South a few years ago, has nearly disappeared; it is less fatal than formerly, in places mentioned, as Yazoo and Holmes, Mississippi, and Desha, Arkansas.

Lac County, Iowa, a disease assumed to be chronic inflammation of the liver has been fatal.

"Blind staggers" is reported in many localities throughout the South.

In Alameda, California, influenza and milk fever are reported as prevalent.

In Pulaski, Illinois, horses brought from Kansas communicated a disease to those with which they came in contact, which proved fatal in two or three weeks, while the Kansas horses remain in about the same condition as when introduced.

A large number of horses has been lost by a catarrhal fever at Cleveland, Ohio; and a disease affecting the coffin joint, resulting fatally in ten days, has occasioned some loss. Diagnosis show a separation of the ligaments of the joint and foot, which turns up, causing the animal to step upon the ankle. The flexor tendons are literally severed from the lamina, and the foot will drop off by simply cutting through the skin with a knife. None have ever been cured, and no one appears to know the cause of the difficulty. Animals, apparently healthy, drop in the harness or at pasture, get up only a few times, and unable to walk a step.

The following extracts refer to other diseases:

Kalamazoo County, Michigan.—A strange disease has prevailed to some extent in this county during the last three months. Nearly all horses die that are attacked. It does not seem to yield to any remedies, so far as I can learn. It is attended with chills, fever, congestion of the lungs, and great prostration or weakness. It is thought to be contagious, one farmer having lost four within a short time.

Vernon County, Mo.—Horses have died in large excess of former years. The reports show three diseases: blind staggers, yellow water, and sore tongue. They are all described as living about a month before dying; eat hearty, get hide-bound, the hair deadens, they matter at the eyes and nose, and die of weakness. Some farmers have lost nearly all their horses in this way. From the information received, I have reduced the three diseases to one, and that one caused by feeding the worm-eaten corn, (carelessly,) which was so common last year, owing to the continued rains.

A fatal disease affecting horses is reported from Douglass County, Nevada:

Post-mortem examination determines the cause to be a small wire worm, from one-half an inch to two inches in length, pointed at either end, white, and about the diameter of a cambric needle. They penetrate the body of the animal in all directions, and have been found in some instances between the flesh and the skin. They are hard, wiry, and very tenacious of life. When placed in a decoction of tobacco juice they swim around quite playfully, eventually, however, giving it up. The symptoms manifested by the animal are weakness of the loin and general debility, gradually growing worse, lingering from five to ten days thereafter. The disease is not confined to any locality; makes its appearance in spots, but generally when it appears several of the band die. One farmer lost eight, his neighbor nine, another lost twenty-six, among which was a valuable stallion, that was kept up in the stable; the balance were

running out. Mr. Boles informed me that he saved his last five attacked by administering three ounces spirits of turpentine and two ounces sweet oil in one dose and obliging the animal to eat warm bran mixed with flax-seed. He informs me that one colt passed over two quarts of worms.

George W. Mumford, of Gloucester County, Virginia, writes as follows: "A friend having placed in my hands the volume containing your report as Commissioner of Agriculture for the year 1868, I have read it with attention and pleasure; and though quite a novice in farming, with only the experience of a few years, yet having suffered heavily by the loss of horses and mules, I thought it might be beneficial to others to communicate to you the nature and cause of the disease which produced their death, the symptoms attending it, and the appearance of the bodies as exhibited by post mortem examination. I lost four mules and two horses in a short time, all, as I believe, from the same cause.

"I will preface my statement with the remark that these animals were regularly and plentifully fed with good corn and fodder, but while cutting my oats, and for some time afterward, we had a succession of very heavy rains, which caused some of the shocks to heat and mould, and, in a greater or less degree, to rot before they could be housed or stacked, and consequently I did not deem them of sufficient value to haul them from the field. Subsequently, when not working my teams, they were turned into the oat field to graze. I perceived at intervals that they were eating the oats, and supposing they would only pick out such portions as were sound, they were not interfered with, and the shocks thus left in the field were either eaten or trampled under foot. In a short time these animals began to fall off in flesh, and evidently were unable to perform work requiring much strength. I became doubly attentive to their food, regularly saw them fed and watered, salted, properly curried, and rubbed, and furnished with good bedding; still they gradually declined in flesh. This progressed for about a month, then when I entered the stable early in the morning I found one mule down in his stall, and unable to rise. By running rails under the body both before and behind, with the assistance of my laborers, I raised the animal bodily and placed him upon his legs, when he seemed to regain his power of motion, and could walk and trot apparently as well as ever. After a few days he was found down in the stall again; he could raise himself on his fore-legs and sit up like a dog, but had no power over the hinder parts, from the loins down. The same assistance would have to be afforded, when again he would seem to recover from the paralysis of his posterior extremities. He did not lose his appetite, but indicated, occasionally, uneasiness in the loins, and the quantity of urine passed was small, and somewhat discolored. I applied many remedies that were suggested by friends, by my own mind, and sometimes by the advice of my family physician, but nothing seemed to afford relief.

"There was no veterinary practitioner in the neighborhood. Finding it impossible to continue to lift the animal almost daily in the stable, I turned him into a lot, where he was regularly fed and watered, and continued to graze for a week or so, but when down he could not rise without assistance. In this way he lingered until he died. No post mortem examination was made. In a short time one of my best horses was taken with the same symptoms, weakness in the loins and paralysis of the hinder extremities, requiring the same assistance, but when placed upon his legs having the ability to trot, and even to gallop as usual, but finally he died in the same manner. Then, in quick succession, another mule and another horse, and so on, until I lost the number stated above. I drenched them with whisky, and spirits of turpentine, with

laudanum, wild carrot tea, and with a combination of these, besides various other remedies, which did neither harm nor good, so far as I could judge. After I had lost three, with the aid of one of my field hands, I made a post mortem examination of one of the mules, cutting open the body from the windpipe along the abdomen to its extremity; examined the lungs, stomach, heart, liver, and viscera, and finally the kidneys. Every part of the body seemed in a sound and healthy condition, except the kidneys. One of these had entirely sloughed from its position and fallen into the cavity of the body. It appeared to be a mass of coagulated blood, resembling the color of the liver. I should not have known it to be the kidney, had it not been that the other kidney was partly in the same condition, about one-half of it being sound, though swollen, while the other half, which had not yet sloughed, was hanging to it, as a coagulum, showing it to be the same substance with the one that had sloughed. How the animal could live so long under such circumstances seems wonderful. In making the examination we discovered that the blood, which was found in considerable quantity in the body, was very thin, and of the color of pokeberry juice, much diluted with water; and when the hand was dropped in it and held up, it scarcely exhibited discoloration. All the horses and mules I had, except three, died, and these three had not eaten the heated or rotten oats, and hence I conclude they were the cause of the disease. I have stated these facts under the hope that the proper remedy may be suggested and made public.

[The department has prepared a report upon "the ill effects of smutty corn on cattle," which is now before Congress, with other reports on diseases of stock, and will probably be ordered printed at an early day.]

DISEASES OF SHEEP.

For a few years past, scab and foot-rot have been very prevalent among large flocks in New York, Ohio, and several of the western States. During the past year, owing to the culling and killing of diseased sheep, and greater care and better treatment, these diseases appear to be less prevalent. There is still much foot-rot; in some counties twenty-five per centum of all flocks have it among them, and in a few instances a much larger proportion. These diseases have spread somewhat by the dispersion of flocks to the west and south. Liver-rot is reported in Cuyahoga, Ohio, and rot is mentioned repeatedly in returns, without indicating whether foot-rot or liver-rot is meant. Grub in the head appears to be less common than heretofore. A disease of the loins has been fatal in Utah. In Ohio, several reports of deaths from "pale disease" are received. A few cases of dropsy are mentioned. In Texas, losses of lambs have been very severe from worms, and some fatality has been caused by exposure during cold weather. It does not appear that a larger percentage than usual of mortality of young lambs has been suffered. The following extracts from correspondence are appended:

Tuscarawas County, Ohio.—Sheep diseases are various. The most serious is what is called the pale disease and foot-rot. As to the cause of the pale disease, men differ; one fact is observant, that it is mostly confined to lambs and yearlings, and the deaths occurring from time to time, after the first of January. Their skins will be found white and bloodless; reduced in flesh, but not to as great an extent as might be supposed; some have been examined and small worms found in their intestines. It is my impression, derived from observation and practice, that a great deal of the pale disease could be avoided by taking the sheep in to winter in good, strong condition, and the time to watch and observe the sheep the most carefully is soon after the first frosts of autumn appear, and then a little grain fed daily until winter begins will be money well expended.

Fulton County, Ohio.—A disease is reported in Fulton County which attacks many while in good condition. They eat sparingly, get weak, and after a week or two die. No remedy has been found. There is no running at the nose, or eyes, or other indications of a disease of the head.

Winnebago County, Ill.—Last year I made a statement of an unusual disease appearing among my lambs. A similar trouble appeared again this last fall, commencing later in the season and running nearly through the winter, not so fatal as in the fall of 1868; then I lost about one-half of my lambs; during last fall and winter, about one-fifth have died, and, with one exception, of the same cause, dysentery. I have examined quite a number of those that died, and have come to the conclusion that the worms are the primary cause of the disease. I find the small white worms by millions all through the intestines, the latter being completely full of knobs, which, if I mistake not, contain the eggs of the parasites. I would like to have the opinion of a good veterinarian upon the subject. Some of my sheep died early in the winter of the same cause. Several flocks of lambs were decimated by dysentery last fall in this county.

De Witt County, Ill.—Our sheep have been subject to most all diseases to which they are liable, the scab and foot-rot being the most prominent and fatal. I think that fully three-fourths of our entire sheep have been carried off by these diseases, or affected to such an extent as to cause the owner to kill them for the pelt, the carcass being fed to hogs.

Laurel County, Ky.—There has been a disease rather unusual among sheep. I don't know what name to give it. The animal stands in a very stupid manner, will not eat anything; if driven, will move forward without turning for any obstacle until he runs against it as if he was blind. The eyes are wide open. In this condition he will live eight or ten days, and dies.

Nebraska.—Great mortality from scab is reported from Merrick County. Seventy-five per centum of the sheep have died from scab. One man had three thousand head in the fall; to-day he has about three hundred. I am satisfied his sheep did not get the care they were entitled to—a course of practice, I am sorry to say, too common in this county.

Worth County, Mo.—One flock of about twenty-five, a year ago, had a disease new to me and to others in this vicinity. They would commence stepping forward with their fore feet until their bellies would almost touch the ground, and would stand in that position till they would fall over. These are the symptoms so far as I recollect. The remedy used was a piece of assafetida about as large as a small hickory-nut, boiled in sweet milk, which proved effectual in most cases, but in case of a second attack they were incurable; at least, all attacked the second time died.

Lewis County, Mo.—There is little disease among the native sheep, but of one flock of eight hundred and fifty, imported from Illinois, all died except about sixty.

Bexar County, Texas.—The scab was unknown until of late years, when it was introduced by sheep brought from other States. The original sheep of the county, the Mexican, were never affected by the scab. It has been found to yield readily to treatment with tobacco juice, with which the scab has to be washed after the wool has been taken off. One flock numbering eight thousand head in 1861 was reduced to one thousand four hundred by 1868, when they were moved to a fresh range two hundred miles off. They are now recovering.

Williamson County, Texas.—We have no diseases among sheep excepting scab, and that prevails to a greater or less extent in all considerable flocks, the loss ranging from a small per centum to one more than equal to the increase.

DISEASES OF SWINE.

There is something radically wrong in the management of swine, resulting yearly in the loss of millions of young pigs and hogs, or else the genus *Sus* is an unhealthy and unwholesome animal, and therefore unfit for human food. One or the other of these conclusions seems to be forced upon the common sense and sound judgment of the observer. The mortality among young pigs, for which the butcher has no responsibility, is nearly if not quite proportionate to that of infants of the human species, and aggregates millions of individuals yearly. What is the cause? It is greatest in the West, notwithstanding the healthfulness of a free range, while eastern pigs are generally shut up in close pens. In all accounts of "hog cholera," which popularly means any disease which sweeps off the species as an epizootic, while remedies are unavailing, prevention is found to be practicable, at least in a partial degree, and coal ashes, salt, sulphur, soap, saltpeter, gas-lime, coal-oil,

tar, charcoal, sulphate of iron, smartweed tea, soap-suds, poke-root, tobacco, assafetida, garget-root, mandrake, and all the poisons of the apothecary shop are administered. There appears to be an irrepressible craving for something besides the inevitable corn, which is too concentrated for the exclusive and continuous diet of any animal; hence, those who feed sloppy mashes of potatoes, beets, or other roots, as well as corn, giving wholesome variety and sufficient bulk, and have exercised ordinary care and discretion in other respects, have ordinarily escaped the dreaded "hog cholera." Occasional feeds of bituminous coal, charcoal, sulphur, and similar substances of antiseptic or corrective tendency, have become quite common, and testimony to their efficacy is very abundant. Spirits of turpentine, copperas, and arsenic, are often given in the way of preventive medication, as well as in attempted cure. A judicious variety in feed, and care and treatment dictated by reason and prudence, of which an interest involving so much money is certainly worthy, would doubtless prevent much the greater portion of the losses which are so disastrous as to prevent farmers from enlarging and even continuing a business which has become so precarious. Numerous reports are received showing the discouragement of pork producers in districts where diseases have been peculiarly fatal, and revealing a disposition to quit hog-raising altogether.

No prevailing disease is reported in the New England States.

New York.—A few cases of dysentery in Tompkins; many pigs die in Genesee; in Niagara, few sows raise more than three or four.

New Jersey.—Some cases of "hog cholera" among a lot fed upon the refuse of a cheese factory in Sussex; a few western hogs died in Mercer, loss two hundred dollars; some disease in Gloucester.

Pennsylvania.—In Lancaster, one distiller lost one hundred out of three hundred; a miller lost all (thirteen) western hogs, some worth $30 to $60 each; one-half of a lot of Ohio hogs died in York; loss five per cent. in Perry; twenty per cent. in Lehigh.

Maryland.—Losses in Washington, Baltimore, and Kent.

Virginia.—Measles prevalent in Princess Anne; loss thirty-three per cent. in Nelson; loss two thousand in Henrico, mainly at distilleries; some feeders in Montgomery lost thirty fat hogs each; loss thirty-three per cent. in Scott; in Surry, one man lost seventy—in all cases hogs kept up and fed on cooked food escaped.

North Carolina.—Loss in Duplin, fifty per cent.; Jackson, fifty per cent.; New Hanover, 30 per cent.; Macon, twenty-five per cent.; Caldwell, 20 per cent.; and smaller losses were incurred in Chowan, Beaufort, Surry, Granville, Alamance, and Moore; in Green, several thousand pounds of pork were lost.

The following quotations are made from South Carolina correspondents:

Union County.—A disease, commonly called hog cholera, has carried off many of our hogs. When first attacked the hog becomes stupid and dull, then stiff, loses appetite, vomits; and they generally die in one to five days after the attack. All ages, sizes and conditions are subject to the disease. The loss has been about twenty per cent. Various remedies have been used, but nothing has been found that will cure in all cases. In some cases strychnine has been given and the hogs recovered.

Georgetown County.—Since February the hog cholera showed itself in the northern section of the county. One farmer reports his entire stock dead (about forty head) and thinks that within his range of five miles as many more have perished. The disease has not yet subsided.

Georgia.—Loss twenty-five per cent. in Pike; twenty per cent. in Warren and Chattanooga; ten per cent. in Clayton and Gilmer; less in Butts, Stewart, Taylor, and Walton.

Alabama.—Loss fifty per cent. in Lawrence; twenty-five in St. Clair; ten in Jefferson; and slight loss in Etowah and Tallapoosa.

Mississippi.—Loss fifty per cent. in De Soto; twenty in Coahoma; and less in other counties.

Arkansas.—Great mortality from measles in Desha. The correspondent for Arkansas County says: "Loss from hog cholera, as near as I can judge, about twenty-five per cent. Since the winter fifty per cent. have died for the want of feed; the mast failed and the farmers had no corn to feed on, as most of their ground was planted with cotton; take all together, I think seventy-five to eighty per cent. have died, where the disease prevailed." Loss in Mississippi, forty per cent.; in Montgomery, thirty-three per cent.; in Independence and Madison, twenty per cent.; in Jackson, seventeen per cent.

Texas.—In Travis, Fayette, and other counties, great mortality of young pigs is attributed to their eating young cockle burrs. Large losses are reported from Anderson, Coryell, Rusk, and Kaufman.

Tennessee.—Loss fifty per cent. in Anderson; thirty in Dyer; twenty-five in Smith and Lauderdale; $1,000 worth in Union; and considerable in Weakley, Sullivan, Obion, Hawkins, Coffee, Jefferson, Greene, Giles, and Campbell.

Ohio.—Loss less than usual—a little cholera in Butler, Fairfield, Greene, Montgomery, and Wayne.

Kentucky.—Heavy loss is noted in this State. In Shelby three thousand out of twelve thousand fattening; in Oldham, one thousand head; in Henry to an alarming extent; heavy loss in Rockcastle; fifty per cent. in Christian and Laurel; twenty-five per cent. in Nelson; considerable in Jefferson, Gallatin, Calloway, Clark, Warren, Lincoln, Kenton, Johnson, and others.

In Michigan, hog cholera is only reported in Ottawa; and in Wisconsin, only in Waushara.

Indiana.—Hog cholera has been far less prevalent than usual, but the losses range from twenty per cent. downwards in Warren, Martin, Dubois, Greene, Benton, Pike, Johnson, Carroll, Bartholomew, Scott, Jefferson, Harrison, Miami and Elkhart. In parts of Tippecanoe the loss is fifty per cent.; fifty per cent. is given in Posey; and in Fayette four-tenths of last year's pigs were lost. The correspondent in Bartholomew says: "Hog cholera has prevailed in some localities, while others have escaped entirely. It may be remarked that the disease known as hog cholera has somewhat spent its force, and is not as fatal as when it first made its appearance among us. Whether this abatement of its force and fatality will continue and lead to its gradual and final extinction by natural or unknown causes, I cannot say. It is a matter worthy of note, that hogs in large lots and of small range are much more liable to contract the disease than when differently situated."

Johnson County.—"The hog cholera prevails more or less every year. I suppose the loss will average at least one-tenth for each season. But the actual loss by deaths caused by the disease is not so much the cause of the decrease of the pork product as the prevalence of cholera among hogs. Farmers are too cautious of their money and labor to put them in animals liable to such a fatal disease. Pork cannot be plenty or cheap until the disappearance of the cholera from among hogs."

Illinois.—In De Kalb the loss of two thousand old hogs and one thousand pigs is reported; in Crawford it amounts to $20,000; in

Bureau, three hundred hogs; in Edwards and Champaign more loss was noted in rolling districts and in "timber" than in prairie; and other counties, in which cholera or other diseases have prevailed, are as follows: Piat, (three hundred in one township,) Monroe, Menard, Rock Island, Macoupin, Logan, Jo Daviess, Fulton, De Witt, Stephenson, Marion, Mercer, Kendall, Jackson, Henderson, Boone, Gallatin, Morgan, Lee, Greene, Williamson, (twenty-five per cent.,) Fayette, Pike, Massac, Clinton, White, (fifty per cent.,) Stark, Scott, and Pulaski. The following extract illustrates one aspect of the preventive question:

So thoroughly am I convinced of the use of preventives, that for the last three or four years I have been in the habit of feeding my hogs daily with a mixture composed of various ingredients, the basis of which is kitchen slops, to which is added a plentiful supply of salt, bran, Irish potatoes, cabbage, turnips, and other vegetables, all of which I endeavor to raise for that purpose in sufficient quantities. The above are all boiled together and fed when cool, in large troughs, to which all the hogs have access. A few years since I lost some hogs with cholera; but, since I commenced the above practice, I have not lost a single hog with cholera, and but very few with any other disease; although I keep a number, varying from twenty to forty head. At the same time my neighbors are continually complaining to me of their losses, and although I explain to them my plan of treatment and that my hogs don't die of cholera, very few of them seem to profit by my experience. Well, they reply, we don't know how it is, we slop our hogs also *sometimes*, and still they die. Besides slop, I feed my hogs dry corn daily. Whether or not it is the slop which keeps off the cholera, I cannot positively say, but I certainly should be afraid to feed them entirely on corn or any other dry food.

Deaths of pigs are common in Minnesota.

Iowa.—In three townships in Mahaska the loss is $5,000; one thousand head in Appanoose; losses also occurred in Louisa, (twenty per cent.,) Clarke, Pottawattomie, Jackson, Warren, Cedar, Page, Butler, and Mills.

Missouri.—The disease is reported in a few counties. The correspondent of Howard says: "Cholera among hogs has prevailed to some extent, but chiefly among the hogs of those who are careless in not crossing with pure animals of good breeds. Those who are particular in keeping up the stock by crossing Chester, Poland, and Berkshires, have lost very few. With old stock bred in and in, the loss has, in some instances, been very great."

Nebraska.—A few hogs fed upon slops of breweries and still-houses in Douglas have sickened and died. In one case a lot of corn that the government refused to accept was fed to hogs, and considerable mortality resulted.

No mention of the hog cholera is made in California, but the following from Stanislaus County indicates a decrease in pork:

The business of swine raising is in the hands of a few and is followed as a distinct one. Those in it keep from two hundred to fifteen hundred or more, herding them in the foot-hills during the rainy season, where roots and mast abound. After grain is cut and threshed in July and August on the plains, the owners of hogs buy the fields for the season and turn their hogs into them, where they feed until fall, when the fat ones are sold for pork in the best market, usually San Francisco. From the scarcity of mast and roots, the increase in herds was less the past year than formerly. The use of the header in harvesting, in place of the reaper, leaves less grain in the field than former years, consequently the hogs made less pork this fall than other years. The falling off in the increase of stock and in the weight of pork in this county may be placed at two-tenths.

RAVAGES OF DOGS.

A partial enumeration of the sheep killed the past year by dogs, as returned from four hundred and seventeen counties, aggregating 99,387,

points to a loss of half a million sheep killed and as many more wounded by dogs, involving an actual loss of two million dollars, and a constructive and none the less real loss to production of many millions more. Millions of dollars' worth of rich grasses and other vegetation annually go to waste in the open and grassy forests, and in the old fields and waste places of the South, because there are no sheep to feed upon them; and the reason why sheep are not thus utilizing this spontaneous production is, the presence of dogs.

The following notes are but samples of complaints coming up from every quarter of the land:

Essex County, New Jersey.—No sheep kept merely for fleeces, on account of dogs.

King George, Virginia.—More than half the flocks destroyed by dogs this winter.

Greenville, South Carolina.—Dogs increasing faster than sheep; wool-growers are slaves to dogs.

Sumter, South Carolina.—Thirty sheep killed by dogs in one night.

Yazoo, Mississippi.—Half the sheep have been killed by dogs.

Wilkinson, Mississippi.—At one time, twenty-three killed.

Lincoln, Kentucky.—Dogs are a serious drawback to wool-growing. Our legislators have been importuned, time and again, to give protection, but they have turned a deaf ear to our appeal.

Rush, Indiana.—The slaughter is severe in every township.

Ripley, Indiana.—Sheep do well when not molested by dogs.

Warren, Indiana.—Large numbers killed by dogs.

Parke, Indiana.—The loss has been ten per cent. by dogs last winter.

Fayette, Ohio.—No losses except from dogs.

Morgan, Illinois.—Selling off for mutton, on account of dogs.

Edwards, Illinois.—Our correspondent lost sixty fine grade South Downs killed by dogs, and many injured.

Scott, Illinois.—Dogs destroy more than all diseases.

Scott, Missouri.—Sheep could be profitably kept but for dogs. *Many persons think the United States government should levy a tax on dogs.*

Iowa County, Iowa.—There is no disease but the dog disease.

Rusk, Texas.—No disease among sheep, but great loss from dogs killing them at night; and, unless dogs are restrained from running at large, as they do here, sheep will become extinct in the county.

Similar notes could be multiplied indefinitely. While the reduction of taxation is the tendency of the times, a tax by the general government upon dogs, like that of British and European governments, would prove a hundred-fold more benefit than hardship, relieving the poor of the great burden of keeping them, and society of the intolerable nuisance of worthless dogs, at the same time improving the animals worth the value of a tax, and taking from the industry of wool-growing one of its greatest burdens of taxation. The following table of actual returns is appended:

States.	Number of counties reporting losses by dogs.	Number of sheep killed.
Maine	5	1,400
New Hampshire	3	123
Vermont	3	165
Massachusetts	5	595
Rhode Island	2	270
Connecticut	6	544
New York	20	3,515
New Jersey	3	2,610
Pennsylvania	19	3,671
Delaware		
Maryland	7	1,416
Virginia	14	1,826
North Carolina	24	5,905
South Carolina	5	685
Georgia	16	2,533
Florida	1	50
Alabama	5	725
Mississippi	8	2,335
Louisiana	3	612
Texas	10	2,870
Arkansas	5	405
Tennessee	16	8,027
West Virginia	21	4,360
Kentucky	19	3,336
Missouri	32	10,602
Illinois	35	10,194
Indiana	18	4,078
Ohio	27	9,526
Michigan	13	2,244
Wisconsin	16	2,164
Minnesota	8	417
Iowa	28	8,670
Kansas	10	924
Nebraska	2	75
California	5	1,265
Oregon	5	1,410
Total	417	99,547

The legislature of New Jersey at its last session enacted the following law defining the legal status of the canine species, and levying a State tax upon owners of the same:

1. *Be it enacted by the senate and general assembly of the State of New Jersey,* That a State tax of $2 on the owner of every dog, and $3 on the owner of every bitch, be levied and collected at the same time and manner that taxes are now collected.

2. *And be it enacted,* That it shall be the duty of all owners of dogs of either sex to provide the same with a collar, to be worn at all times, with the owner's name and address thereupon.

3. *And be it enacted,* That dogs of either sex, to be considered as property, shall be registered by numbers, free of charge, in the township or city clerk's office of each township or city where such owner resides.

4. *And be it enacted,* That no damages shall be collected by the owners of any dog killed in the act of destroying cattle, sheep, or poultry.

5. *And be it enacted,* That the taxes collected by each county in pursuance of this act be used by said county as a fund for the award and protection of owners of sheep destroyed or killed by dogs—any surplus over and above the settlement in full of all claims for killed sheep to be used annually for public school purposes under the direction of the county school superintendent.

6. *And be it enacted,* That all acts or parts of acts inconsistent with this act be, and the same are hereby repealed.

7. *And be it enacted,* That it shall be lawful for any person or persons to kill and bury any dog or bitch found running at large without a collar, or known to be unregistered, for which service he or they shall receive the sum of fifty cents per head, to be paid by the collector of the town, township, or ward where said dog or bitch was killed, upon presentation of a proper affidavit to that effect.

8. *And be it enacted,* That this act shall take effect immediately.

EXTRACTS FROM CORRESPONDENCE.

FRUITS AND THE CEREALS IN MINNESOTA.

New Ulm, Brown County, Minnesota.—In consequence of the high elevation of this part of the country above the level of the sea, we shall probably never cultivate here the more delicate kinds of fruit. Some trials, however, have been made, and they tend to show that, with a careful selection of the situation, we may succeed in raising fruit that had been pronounced a perfect failure in former years. Some very fine Concord, Delaware, and Isabella grapes have been raised in the gardens.

Experiments made by several farmers and by inhabitants of this town seem to show—

1. That it is useless to plant fruit trees on the high prairies, unless protected by timber.

2. That it is not so much the cold itself, but the wind, that will kill the trees.

3. That for this reason our ravines should be preferred, if orchards are to be planted.

4. That imported trees suffer in proportion to the distance southward of the nurseries from which they came.

5. That the safest method is to have nurseries here, to get the shoots from other regions and ingraft them as near the root as possible.

6. That from the presence of the wild plum and the wild cherry it is believed that stone fruit may be raised here with less difficulty than core fruit.

7. That our wild plums may, by the transplanting of wild trees, be cultivated, and that they will attain a size three or four times larger than in their wild state.

From the abundance of wild grapes it may be inferred that wine culture will yet become a branch of industry with us; and the strong wine made from our wild grapes indicates that, with proper attention, some new and valuable varieties for northern latitudes may be produced here.

For berries of all kinds this region seems to be admirably suited. Strawberries of excellent flavor, red raspberries far superior to the black variety, black currants and gooseberries grow wild here, and the cultivated varieties in the gardens yield handsomely.

The chief article of export with us is wheat, and this will probably always be the case. The last harvest was a bountiful one, about twenty-five bushels per acre, on an average; but the low price of fifty cents a bushel does not compensate the farmer for his labor, and many are talking of cultivating something that will pay better. If this should be the result of the present embarrassment of our farmers, it would in the end be a real blessing; for during the last two years the raising of wheat has been carried on to an extent almost excluding other articles.

The price of meat conclusively shows the truth of this statement.

For with wheat at fifty cents a bushel, beef at seven and one-half cents, and pork at ten cents per pound, there must be something wrong in the farmer's calculations.

The yield of cereals in this county for 1869 may be set down as follows: Wheat, 150,000 bushels; barley, 30,000 bushels; rye, 10,000 bushels; oats, 85,000 bushels; Indian corn, 50,000 bushels.

A serious drawback attending wheat culture is the lateness of our spring. The season may also be wet, and the farmer finds it impossible to do all his work in the time allotted him. The wheat must be put in, however, and as there is not time left, other things will be neglected. This trouble will last as long as our farmers continue to raise spring wheat. They say that winter wheat will not do on our prairies; it will be killed by the frost, especially if there be no snow on the ground. In this they are undoubtedly right, if we bring the winter wheat from the woody districts of the middle States and sow it here on the open prairie. Yet there may be some remedy for this, and my humble opinion is, that if we could introduce the white or red winter wheat grown in the northeastern part of Germany, and especially in Silesia or Poland, these difficulties might be overcome. The climate of that part of Germany conforms very closely to that of Minnesota; our "northwesters" are hardly worse than the "northeasters" there, after they have swept over the icy plains of Russia—and yet a most excellent kind of winter wheat is raised there; the grain large and yielding very good flour. I have no doubt that if that variety could be raised here our farmers could do their sowing in the fall, and the harvest would be two weeks earlier than now.

Potatoes are generally very good here. The "striped bug," which has played sad havoc with them for the past two years, last fall made its appearance in Wisconsin and Illinois, and we shall probably be free from its ravages during the present year. It has been observed, that potatoes in newly broken prairie ground were not attacked by the bug, while it was found in great numbers in places where potatoes had been raised the year previous. The crop was reduced a great deal by the wet fall season. "Pink-eyes" suffered more than others; red varieties less than white ones.

HOG CHOLERA.

James Harkness, of St. Louis, Missouri, writing to the department in reference to "hog cholera," so called, says: A few words about prevention and cure. The beautiful butterfly that is seen in every clover field, lays its eggs in the flower and they are eaten by the hogs, when they develop into worms, much as the nits of the bot fly is developed in the horse, but with this difference: the worms are very injurious to the hog, whereas the bot does the horse no harm.

Sulphate of iron (copperas) in the proportion of a tablespoonful for a hog of one hundred and fifty or two hundred pounds once a week in the slop barrel, will kill every worm it touches as sure as prussic acid will kill red-blooded animals. In case of costiveness from eating nuts, add about the same of sulphur. These safe and simple remedies are equally good for all domestic animals, as they are obnoxious to worms of different kinds.

Timothy, herd, orchard, and other grasses are much better for hogs than clover. Hogs will appreciate shelter from summer's sun or the northern blasts, as much as any domestic animal we possess.

There is no such disease as hog cholera, and if you will send an intelligent veterinary surgeon here, I will convince him.

[There are several butterflies, example *Colias*, &c., which deposit their eggs on clover, but these insects could not possibly do the hogs any injury if introduced into their stomach with the food; even if hatched into worms, and able to resist the gastric juices, they would immediately die in the close, damp confinement; they would also require green clover to feed upon for at least some weeks before changing into the pupa state.]

FARM STOCK IN ABBEVILLE COUNTY.

Abbeville County, South Carolina.—Ours is not a grazing country, and hence not a stock-growing country. In former years our people raised hogs enough for a half supply of meat; most of the farmers kept a small flock of sheep for the family supply of mutton; kept a herd of cattle for like supply of milk, butter, and beef; and also raised some horses and mules. More recently, however, the raising of horses, mules, sheep, and hogs has been generally given up, very much to the impediment of the prosperity of the country. More attention is paid to cattle than to the other animals. The cow yields a present and continuing supply of food, and is not so liable to the raids of the vicious as the hog and sheep. Fewer are, however, raised than in former years. Owing to the drought of last summer, very little forage or cow-feed was saved and put up; no pease (the most valuable food for cows) was saved; so that the cattle have been stinted all winter, and many of them have died. Beef is now worth from twelve and one-half to fifteen cents per pound; we could formerly get as good at from six to eight cents. The pork and bacon is now sent to us from the States north and west of us. Working animals are for the most part brought from Tennessee and Kentucky, and sold to our farmers and planters; and when here they are so illy treated and neglected, that a large number of them die every year. The result of this whole system (or want of prudent economy and system) is that a drain is annually made upon the soil with but little return, which does and will make us a poor people until a change is made.

STOCK-RAISING IN MONTANA.

Gallatin County, Montana Territory.—The fact that vast herds of cattle have wintered in this Territory, solely by plucking as they do in summer the rich bunch grass and are now supplying our market with beef as fat as could be desired, is hard to be credited by those who have been accustomed to see the eastern markets supplied at this season by stall-fed beef only. Yet the fact remains. Sheep seem to thrive equally well.

THE FREEDMEN IN LOUISIANA.

Ouachita County, Louisiana.—The freedmen are working "on shares;" they get on an average one-third of the crop, and are at no expense, (at least they are offered this.) At the end of the year, however, in too many cases, the planter brings in a bill for goods sold the laborer, which takes up all his cotton; the corn is generally sold to the planter or employer at a nominal price, and the poor negro commences a new year's work without a cent.

In the immediate neighborhood of Monroe (this place) many of the

freedmen are buying farms; but few will sell to them. Three of them who purchased five hundred and eighty acres of good alluvial land, paid one-third the price out of their year's earnings.

IMPROVED CULTURE IN ARKANSAS.

Independence County, Arkansas.—There have been but five secular days since the 1st of February which were too wet or cold for plowing, and the result is that all farming work is one month more forward in this county than in the spring of 1869. Three-fourths of the corn and cotton ground is broken up, laid off, and in readiness for planting; and it is due to our people to say that their grounds never were prepared so thoroughly and with so much skill as is everywhere apparent in this county, in the preparation for the crop of 1870.

IMPROVED CULTURE IN MISSISSIPPI.

Amite County, Mississippi.—As a general remark, I feel authorized to say, that there is quite a disposition among the people of this county to improve their stock of every kind, and the improvement in agricultural pursuits, the introduction of new and improved implements of husbandry, and the application of manures and fertilizers, the raising of grasses, and the improvement in various kinds of seeds for field crops, clearly indicate an advance in the various departments of agriculture.

COTTON AND CORN IN SUNFLOWER COUNTY, MISSISSIPPI.

Sunflower County, Mississippi.—This is a cotton country—cotton and corn. We grow from thirty to forty bushels an acre, on an average, of corn, and make the best of cotton in as great abundance as any part of the continent, or indeed of the world. For though the Brazos and Red River lands occasionally make a hit and raise more cotton, our crops are far more certain than theirs. Little more than half the open land is worked. Much of the finest alluvial land lies now uncultivated. This is the country for poor immigrants—men with nothing but their sinews. They are furnished here with everything to make crops, and then those crops are equally divided with them. Any good hand here can make a thousand dollars, worth of cotton and four hundred bushels of corn. I knew one who in 1866 cleared $1,600 with a crop he made and cultivated. He had no rent to pay, however.

DIVERSITY OF CROPS.

Macon County, Georgia.—The Department is working in the right direction in endeavoring to impress upon our people (of the South) the necessity of a more varied agriculture. Nine-tenths of the flour eaten in this county is raised elsewhere; one-third of the corn and nearly all the hay also. There is hardly a land-owner in this county who raises sufficient meat to furnish his labor. We are making some little effort to induce the freedmen to raise their own meat. They are our largest meat consumers, and if they could be induced to raise their own provisions, it would, to a great degree, put a stop to the exit of the enormous amounts of money yearly sent out of our county for provisions.

DAMAGE TO CROPS FROM STOCK RUNNING AT LARGE.

Camden County, Georgia.—An estimate was made in the fall of the cost of three small pigs. They destroyed the planting of over two acres of

sweet potatoes, estimated, by the crop gathered from another acre, at five hundred bushels, worth then $1. Several times a man was sent to drive them out and find the holes under the fences and repair them, requiring two hours work, valued at ten cents per hour, sixty cents.

Whole cost of three small shoats	$500 60
Sold for $1 50 each	4 50
Net loss	496 10

NECESSITY FOR A MIXED HUSBANDRY.

The correspondent for Stewart County, Georgia, after suggesting further interrogatories tending to show the number of mules and horses, the quantity of bacon, corn, and flour introduced into each county, and the percentage on total consumption, says: "Under a system of mixed husbandry in this county, mules, horses, corn and wheat, can, without doubt, be profitably raised; and would not such an exhibition of facts as the above interrogatories would elicit tend to expose the errors of the present system of planting, and lend important aid in enlightening the southern mind, so as to hasten the inauguration of a wiser system of mixed husbandry? Nothing but a startling exhibition of the sternest facts and figures will perhaps ever avail to convince the planting mind of the business folly—the suicidal policy—of yielding to cotton an agricultural monopoly in the South. Cotton planting is a habit with our people. This, added to the large aggregate income which it yields, though fictitious in the main, binds the South to cotton production with fetters strong as steel. An imposing array of aggregated statistical facts may break them.

"Another fact fundamental to the agricultural interests of this section of the South is the increasing scarcity of labor. Ever since the date of manumission labor has been steadily diminishing. In consequence, thousands of acres of good arable land in this county have been yielded to sage and brush. As a further consequence the planter is exerting himself to the utmost, with his diminished facilities, to bring up his income to the standard of previous years, when labor was more abundant. This results in favor of cotton. The scarcity of labor also leads to unhealthy competition in the labor market, with its concomitant evils. One of the most obvious is, that unscrupulous men supplant the better class by offering terms to the laborer with which they are unable to comply, and perhaps never intend to; whereas, the honorable planters, incapable of practicing upon the credulity of the laborer, by making deceptive promises, compete in the market under serious disadvantages. The result is, that the best men fail to obtain labor, inferior men deceive the freedman, and he becomes suspicious of the employers as a class, is demoralized as a laborer, and often retires in disgust from regular field labor and seeks a livelihood in the execution of chance jobs. In all this there is much matter for grave reflection."

DEPARTMENT SEEDS.

Jackson County, North Carolina.—Mr. G. Edwards, living in a mountain section near the Blue Ridge, where wheat seldom succeeds, last year produced on a little square in his garden at the rate of sixty bushels per

acre of Arnautka spring wheat. N. Y. Alman, of Franklin, produced nine bushels from a half bushel of seed on poor red land without manure, of the same variety. We think the Arnautka will prove a great acquisition on our light lands, which are subject to winter-kill.

Lawrence County, Pennsylvania.—From the half-peck of Swedish White oats sent me, I have about seven bushels, as heavy as the original. The peck of Tappahannock wheat produced well, but I find some smut in it; the yield was at the rate of twenty-nine bushels to the acre.

Defiance County, Ohio.—The Tappahannock wheat received from the department has proved a valuable acquisition to our crops; it is pretty extensively sown this year; has proved good for three successive years.

Onondaga County, New York.—In the fall of 1868, I received from your department eight pounds of Tappahannock wheat, which was sown on good ground, yielding three and one-half bushels of plump and beautiful wheat. Last fall this amount was sown on about two acres of land and is now appearing very fine, not having been winter-killed in the least. It bids fair to be a valuable variety for this section.

Clayton County, Iowa.—One quart of the White Schonen oats received from the department last year was sown at the same time, and on the the same kind of land with my other oats, and the results were as follows: from each bushel sown of my oats, I harvested just ten bushels; or an average of thirty bushels to the acre. The one pound of Schonen oats produced thirty-two pounds. The quality is very good; the kernels are longer and larger than other oats.

New Hanover County, North Carolina.—From the ramie seed sent, I raised about forty plants. The plants grew luxuriantly, and this spring, in digging them up to move them to a place where they will not be in the way, I am surprised to find such a mass of succulent roots, tender, and appearing as if they would be excellent food for stock.

AGRICULTURAL IMPORTS OF GREAT BRITAIN.

The British imports of 1869 show that the wheat received amounted to 37,695,828 hundred-weight. In 1868 the receipts were 32,639,768 hundred-weight. The increase is about sixteen per cent. The proportion received from the United States was much larger than usual. In competition with Russia, Prussia, Denmark, France, Turkey, Egypt, Chili, British America, and other countries, this country sometimes contributes a very small portion of the quantity required to supplement the home production of wheat. In 1868 Russia furnished thirty per cent., and the United States eighteen; in 1869 this country sent thirty-five per cent., and Russia twenty-four. Our contribution was equal to 24,605,479 bushels of wheat, besides 1,711,000 barrels of flour, equivalent to 8,555,000 bushels more—about 33,000,000 bushels in all.

The amount of raw cotton imported was 10,903,813 hundred-weight; in 1868, 11,857,893 hundred-weight. The imports of China grass were only eight hundred-weight in 1868, and eleven hundred-weight in 1869; their value £32 and £25 in those years, respectively, or 8½*d.* per pound in 1868, and 4½*d.* in 1869.

The importation of fertilizers continues to increase. The receipts of bones were 75,851 tons in 1868, and 95,979 tons in 1869.

The following tables present the quantities and prices of certain imports of agricultural products:

Imports into Great Britain of live-stock and certain agricultural products for the years 1868 *and* 1869.

	1868.	1869.
Animals:		
Oxen, bulls, and cows ..... number..	114,869	190,674
Calves ..... do....	21,819	29,516
Sheep ..... do....	323,447	691,472
Lambs ..... do....	17,708	18,371
Swine and hogs ..... do....	33,721	69,067
Bones, (burnt or not, or as animal charred) ..... tons..	75,851	95,979
Grain:		
Wheat from Russia ..... cwts..	10,053,617	9,158,331
Denmark ..... do...	654,419	549,811
Prussia ..... do...	4,584,742	4,635,111
Schleswig Holstein and Lauenburg ... do...	45,412	57,454
Mecklenburg ..... do...	647,205	690,147
Hanse Towns ..... do...	756,654	736,134
France ..... do...	56,414	468,274
Illyria, Croatia, and Dalmatia ..... do...	1,004,701	1,030,563
Turkey, Wallachia, and Moldavia .... do...	3,049,088	2,361,878
Egypt ..... do...	3,219,536	1,004,479
United States ..... do...	5,908,149	13,181,507
Chili ..... do...	1,309,575	567,107
British North America ..... do...	557,443	2,723,053
Other countries ..... do...	792,813	531,979
Total of wheat	32,639,768	37,695,828
Barley ..... do...	7,476,224	8,053,660
Oats ..... do...	8,112,563	7,916,870
Peas ..... do...	1,116,246	1,054,387
Beans ..... do...	2,647,390	1,897,220
Indian corn, or maize ..... do...	11,472,226	17,664,113
Wheat-meal and flour from Hanse Towns .... do...	615,756	647,430
France ..... do...	632,359	1,348,061
United States ..... do...	676,192	1,711,000
British North America .. do...	192,850	538,766
Other countries ..... do...	975,865	1,156,298
Total of flour	2,093,022	5,401,555
Indian corn-meal ..... do...	7,389	6,039
Cotton, raw ..... do...	11,857,893	10,903,813
Manufactured	£1,285,767	£1,182,408
Dyes and dyeing stuffs:		
Brazil wood ..... tons..	2,300	7,357
Cochineal ..... cwts..	31,138	32,002
Indigo ..... do...	75,874	83,415
Logwood ..... tons..	35,468	50,458
Madder and madder root ..... cwts..	306,723	143,765
Garancine ..... do...	79,612	30,510
Sumac ..... tons..	13,251	13,234
Gambier ..... do...	20,239	16,267
Cutch ..... do...	3,541	2,573
Valonia ..... do...	29,623	23,494
Flax and tow, or codilla of flax:		
From Russia ..... cwts..	1,295,100	1,087,845
Holland ..... do...	139,224	117,930
Belgium ..... do...	218,658	163,358
Other countries ..... do...	163,687	166,189
Goats' hair or wool ..... lbs..	7,066,773	4,485,566
Manufacture of goats' hair or wool	£90,647	£64,413

Imports into Great Britain of live-stock, &c.—Continued.

	1868.	1869.
Guano:		
From west coast of Africa ..... tons..	1,859	3,220
United States ..... do...	1	403
Peru ..... do...	155,776	199,122
Bolivia ..... do...	4,025	1,612
British West India Islands ..... do...	185	2,292
Other countries ..... do...	20,507	3,361
Hemp and tow, or codilla of hemp ..... total cwts..	1,076,198	1,055,769
Hops ..... do...	231,720	322,485
Jute, and substances of the nature of hemp ..... do...	2,205,062	2,496,058
China grass ..... do...	8	11
Oils:		
Petroleum ..... tuns..	17,160	21,315
Train, blubber, and spermaceti ..... do...	13,991	14,806
Palm ..... cwts..	960,059	814,520
Cocoanut ..... do...	194,752	264,365
Olive ..... tuns..	17,585	28,240
Seed oil of all kinds ..... do...	23,292	19,917
Oil of turpentine ..... cwts..	108,897	116,893
Oil-seed cakes ..... tons..	162,339	159,295
Potatoes ..... cwts..	2,041,474	1,660,189
Provisions:		
Butter ..... do...	1,097,539	1,259,089
Cheese ..... do...	873,377	979,189
Eggs ..... number..	383,969,040	442,165,080
Fish, cured or salted ..... cwts..	297,903	481,732
Lard ..... do...	237,260	255,964
Beef, fresh or slightly salted ..... do...	4,543	14,268
Pork ..... do...	6,984	21,930
Bacon and hams, salted ..... do...	638,127	740,194
Beef, salted ..... do...	240,577	214,903
Pork, salted ..... do...	144,378	165,944
Meat not otherwise described ..... do...	58,461	81,943
Seeds:		
Cotton ..... tons..	94,759	105,646
Clover ..... cwts..	264,878	231,433
Flaxseed and linseed ..... qrs..	1,635,528	1,387,573
Rape ..... qrs..	356,884	260,755
Silk, raw ..... lbs..	7,036,177	5,573,366
Waste, knubs, and husks ..... cwts..	30,550	29,198
Thrown ..... lbs..	326,574	259,509
Tallow:		
From Russia ..... cwts..	414,998	319,801
Australia ..... do...	215,418	224,186
South America ..... do...	456,802	431,712
Other countries ..... do...	150,130	250,090
Wool—sheep and lambs:		
From Europe ..... lbs..	22,267,637	25,199,401
British possessions in South Africa ..... do..	35,993,527	34,307,882
British India ..... do..	17,602,442	18,796,578
Australia ..... do..	155,745,199	158,477,960
Other countries ..... do..	19,320,004	18,379,522
Alpaca and the llama tribe ..... do..	1,815,301	3,300,345
Woolen manufactures not made up ..... value..	£2,261,192	£2,445,229
Woolen rags torn up to be used as wool ..... lbs..	21,349,104	24,193,008
Shawls, scarfs, and handkerchiefs ..... do..	34,087	37,271
Woolen and worsted yarn ..... do..	9,337,947	10,022,528

Value of certain imports into Great Britain for the year ending December, 1869.

	1868.	1869.
Animals—living:		
Oxen, bulls, and cows	£1,970,975	£3,695,295
Sheep	506,109	1,194,982
Lambs	21,055	24,032
Grain:		
Wheat	22,069,353	19,515,758
Barley	3,799,527	3,379,775
Oats	3,875,929	3,340,494
Peas	549,313	455,142
Beans	1,265,842	832,412
Indian corn or maize	4,838,012	5,935,665
Wheat meal and flour	2,832,077	3,792,939
Cotton, raw	55,184,680	56,851,645
Cotton, manufactures not made up	1,285,767	1,182,408
Flax:		
Dressed and undressed, and tow or codilla of flax	5,098,387	4,179,502
Guano	2,039,478	2,640,983
Hemp:		
Dressed and undressed, and tow or codilla of hemp	2,087,669	1,940,275
China grass	32	25
Jute, and substances of the nature of hemp	1,970,220	2,181,718
Hides:		
Untanned, dry	1,205,002	1,364,570
Wet	1,684,105	1,253,944
Tanned, tawed, curried, or dressed, except Russia	735,217	680,248
Hops	689,383	1,098,317
Indigo	2,854,213	3,083,531
Oil-seed cakes	1,411,525	1,361,580
Oil:		
Petroleum	298,856	441,122
Train, blubber, and spermaceti	658,238	821,661
Palm	1,891,573	1,583,945
Olive	1,186,828	1,493,285
Provisions:		
Butter	6,340,718	6,923,210
Cheese	2,565,213	3,083,850
Eggs	1,009,285	1,126,823
Lard	763,554	930,516
Fish, cured or salted	303,740	477,182
Meat:		
Fresh or slightly salted—beef	12,516	39,951
Pork	19,554	77,518
Salted—bacon and hams	1,780,076	2,432,260
Beef	538,147	380,291
Pork	362,667	498,307
Meat not otherwise described	165,991	233,480
Rice:		
Not in the husk	2,894,916	2,837,157
Seeds:		
Flax and linseed	4,378,254	3,646,669
Silk:		
Raw	8,741,045	6,812,831
Thrown	881,522	614,603
Sugar:		
Total of sugar unrefined	13,339,758	13,550,579
Molasses	519,968	602,610
Tallow	2,961,319	2,770,285
Tea	12,431,454	10,319,420
Tobacco:		
Stemmed	460,304	909,908
Unstemmed	1,282,983	931,438
Manufactured and cigars	555,144	408,556

Value of certain imports into Great Britain, &c.—Continued.

	1868.	1869.
Wool:		
Sheep and lambs	£14,873,623	£14,299,336
Alpaca and the llama tribe	246,875	397,509
Woolen rags torn up to be used as wool	226,509	243,010
Woolen manufactures not made up	2,261,192	2,445,229
Woolen and worsted yarn	1,653,504	1,775,689

WHERE OUR WHEAT EXPORTS GO.

A reference to official customs statistics will show that Great Britain and her colonies constitute our main reliance for a market of our surplus wheat. Few may be aware how small the quantity taken by other countries actually is. The amount of wheat exported in the fiscal year ending June 31, 1868, was 15,940,899 bushels; of this but three per cent. (461,198 bushels) failed to reach British or colonial territory. The paucity of these exportations illustrates the futility of attempting to grow grain to feed the millions of Europe and Asia, as follows: France, 260,763 bushels; Portugal, 83,190; Belgium, 34,726; China, 29,882; Venezuela, 23,364; Peru, 20,289; Holland, 7,000; Philippine Islands, 1,119; Cuba, 560; Dutch West Indies, 400; Mexico, 5 bushels—total, 461,198 bushels. The practical deduction from these figures is, that there is but one country in the world to which we can look for a market for wheat, and to that one only for a small portion of her supply, and that portion at prices competing with the markets of the entire globe.

The prices of 1869, as compared with those of 1868, represent a reduction in the aggregate sent to Great Britain of eight millions of dollars. If, as is asserted, the prices of exports control domestic prices, the reduction of the value of the home consumption is equivalent to far more than the amount received from the entire exports of 1869, and the farmers would have received more money if this surplus had been allowed to rot. While low prices are not regarded as an unmixed evil, the present depression of the wheat market is shown to be a natural result, in part at least, of over-production, for which farmers have only themselves to blame. It is better to have abundance than scarcity, for the present good of consumers and the ultimate advantage of producers themselves; but when all other farm industries are neglected for one favorite crop, the resultant depression and discontent should be attributed to its proper cause, and not to taxation or other political influences.

BEET ROOT SUGAR.

Dr. G. W. Hulse, of Denver, Colorado, in a communication reporting the dispatch of specimens of sugar beets, &c., to the department, writes as follows in reference to beet sugar manufacture:

To establish successfully the production of beet sugar in this country much will depend upon and much will be expected from the Department of Agriculture; the mere production of the raw material is a simple part of the business. Extracting or the making of the sugar is a different business, and one which has deeply engaged the highest scientific minds of other countries for the last half century. They have resolved the

matter into complete success and it would be worse than criminal for us to shut our eyes against the light they have thrown upon this subject, so important to the comfort and welfare of man.

France now sends raw sugar into the partially free market of Liverpool, thus competing successfully with tropical or cane sugar from the colonies, though only a few years ago she was dependant for her supplies upon tropical sugar. Her resources of territory and of soil suitable for the growth of the raw material, compared with those of this country, are insignificant. Colorado alone can equal her capabilities for production.

Think of a hundred millions of dollars being sent out of the country annually for raw sugar, while we have the capabilities of producing our own supply, and adding this sum, and even double and treble the amount, to our annual exports. I have observed whenever a poor article of sugar finds its way to the consumer here or elsewhere, the mercantile class cry out, "beet sugar." But whence this prompting? Beet sugar is identical with cane sugar. The poorest sugar in the market is that of our own country prepared by the fashionable process of bi-sulphite of lime. By the use of this unreliable chemical compound a mixed sugar is often obtained, inverted or interverted. Our importers often buy such sugar, and refiners realize their mistake only when they come to filter and crystalize it. This mode of making raw sugar with bi-sulphite of lime has been industriously spread throughout the West Indies, whence our refiners draw a large supply. So long as sugar refiners located in our large commercial cities can use their capital to great profit in this business, the refining of beet-root sugar may languish, whatever the capabilities of the country; so long as frontiersmen were confined to the forest region of the country, that useful and noble tree, the sugar-maple, made the hardy farmer independent of the sugar refiner, and even of the cane sugar; and I have often thought that from the maple tree scientific men might draw useful instruction. Some authorities contend that sugar exists in plants at the expense of starch; others contend that it is an alteration from cellulose. Were it an alteration from either of these substances we ought to find it in the descending juice or sap of the maple, and not in the ascending or unelaborated juice or sap. All experience shows, however, that sugar is obtained from the ascending juice, and that after its more perfect elaboration, and the tree, plant, or grass puts forth its efflorescent state, we can no longer draw sugar from its juices. I believe this law will hold good with all other trees or plants furnishing the elements of sugar ready formed in the plant. The cane, *Sacharum officinarum*, is a perennial plant, and being tropical, or a bark stove perennial, comes slowly to its efflorescent state, and on this account its ascending juices require and have long time for elaboration. Not so with Indian corn, sorghum, and wheat. They are annuals, and afford sugar only before their juices undergo that degree of elaboration necessary to the efflorescence of the plant. Beets, carrots, and parsnips, being biennials, their juices contain their maximum of sugar substance the first year, and long retain it, and that too before the more perfectly elaborated juices form the complete skeleton or cellulose of the plant.

These facts I mention as important to the agriculturist, and especially so to those engaged in extracting the sugar from the raw material. Fortunately the plants lifted from the ground when it is known they contain their maximum of sugar matter may with careful management long retain it for the convenience of the subsequent operation. Here let me remark that this region, exempt from late summer and early autumn rains, has great advantage over the eastern and interior western States, where rainfalls at those seasons are heavy and always injurious, changing suddenly the state of the juices in the plants, and often making those that were rich in sugar poor and unprofitable. In this particular matter I have had my experience with sugar-cane. Beets are quite as reliable for the yield of sugar in a favorable northern climate as sugar-cane is in the tropics, or in semi-tropical climates. My belief is that if proper machinery for extracting the juice of the beet, and suitable utensils for defecating, filtering, evaporating or reducing to sugar, could be obtained for this section of the country and properly located, a new era in sugar production would speedily follow.

The use of the rasp or mill for rasping or tearing the beets, preparing the roots for the press, is as easily managed as an old-fashioned apple or cider mill, and the hydraulic presses work with corresponding simplicity. The utensils for defecating, filtering, and evaporating, as well as the centrifugal for drying, have all long been in use in the first-class sugar-works of Louisiana, and skilled workmen or operators in this branch of the business are quite equal to all that is required in this particular. Could our scientific journals, and our agricultural papers especially, be induced to spread before the people cuts, drawings, and representations of machinery and utensils necessary for this particular industry, the reading community would soon come to appreciate its requirements or advantages.

PROFIT OF STEAM PLOUGHING.

The following extract of a letter from E. Lawrence, sugar planter in Plaquemines Parish, Louisiana, presents a very gratifying view of the results of plowing with the Fowler steam plows, of the importation of which an account has heretofore been given:

In the fall of 1867 I imported a complete set of fourteen-horse power double-engine steam-plowing tackle, from Messrs. John Fowler & Co., of Leeds, England. Owing to the very rainy and bad weather in the fall and winter of 1867, our plowing operations were very limited. Our work, however, proved very satisfactory, and the facility and ease with which my laborers were enabled to handle the tackle, and the anxiety to have more powerful engines for our heavy, stiff clay soils, determined me to order from Messrs. Fowler & Co. a set of their twenty-horse power steam-plowing tackle, which I have found to be all that was required for our heaviest work. Since then both sets have been in constant use, plowing the lands. When employed in breaking up, with the mold-board plow, they run to the depth of fifteen to twenty inches; and when cultivating or subsoiling between the planted and ratoon cane rows, to the depth of twenty to twenty-four inches.

The first forty acres of steam-plowed lands, which were broken up in the spring of 1868 and planted in corn and peas, and sugar cane in the fall of the same year, gave a yield of one hundred thousand pounds dry sugar, being over twenty-five hundred pounds, or two and one-half hogsheads, of sugar to the acre. On other steam-plowed lands, planted the following spring in cane, the result has been nearly as satisfactory, and this too during a season more unpropitious for the yield of sugar than any I have known for the last twenty-five years. Many of my fields where the stand of cane was equally as good, but cultivated only with horse or mule power, and receiving much more labor and attention than the steam-plowed lands, did not produce more than fifteen hundred pounds, or one and one-half hogshead to the acre. Therefore, my experience, as you can readily perceive, fully justifies me in stating that the yield of cane upon the steam-plowed and steam-cultivated lands, and with *less than half the labor*, will be *fifty per cent.* greater than can possibly be obtained by any other system of cultivation. The advantages which will be derived from the application of steam to the cultivation of the soil, in our rich and inexhaustible lands in the valleys of the Mississippi, and the vast prairies of the West, so admirably adapted to steam cultivation, is not now within the reach of the human mind to calculate.

The prejudices against steam-cultivating machinery may yet for a time retard its general use on this continent; but the scarcity of, and rapidly increasing demand for labor, now so sensibly felt in every section of our country, can only be supplied by the introduction into general use of the steam plow. It will supersede the necessity of the introduction of Chinese labor. We will then be able to supply the world with *cotton, bread* and *meat.* There is no country so admirably adapted to steam cultivation as ours; and I believe the day is not far distant when the smoke of the steam plow will ever be in sight of the millions of freemen who will then cultivate and inhabit our vast agricultural continent.

FARMING IN AROOSTOOK COUNTY, MAINE.

The Presque Isle Sunrise supplies statistics of farm products in Aroostook County, Maine, for 1869. The seventy-six farms reported show the aggregate yield and value of the several products named, as follows:

2,990 tons of hay, at $10 per ton	$29,900
2,790 bushels wheat, at $2 per bushel	5,580
693 bushels corn, at $1 50 per bushel	1,039
26,631 bushels oats, at 50 cents per cushel	13,265
24,731 bushels buckwheat, at 50 cents per bushel	12,365
573 bushels beans, at $3 per bushel	1,719
20,260 bushels potatoes, at 25 cents per bushel	5,065
28,531 pounds butter, at 40 cents per pound	11,412
7,190 pounds cheese, at 15 cents per pound	1,078
13,500 pounds clover seed, at 25 cents per pound	4,375
62,536 pounds pork, at 15 cents per pound	9,379
Total	95,177
Less paid out for labor	7,759
Leaving	87,417

To be divided among seventy-six owners of the farms for their own time and labor, which is equal to $1,150 each, on an average. When it is remembered that there are other products from these farms than those enumerated, such as roots of all kinds, minor articles of the garden, dairy, &c., we think that it will be admitted by all that farming pays well in Aroostook.

FAT STEERS.

George Ayrault, of Poughkeepsie, New York, reports to the department on four steers, seven-eighths shorthorn, raised by him, and sold near the close of 1869 to William Lalor, of Center Market, New York City, for $3,200, the age of one of the animals being seven years, and of the others six years. The largest stood about six feet high, with a girth of ten feet; and the weight of the animals was 3,300 pounds, 3,320 pounds, 3,406 pounds, and 3,440 pounds, respectively; their proportions being good notwithstanding their enormous size. The aggregate gain in weight during the season of 1869 was 1,460 pounds. The net beef weight of the larger pair, after slaughter, was 4,537 pounds, exceeding, it is claimed, that of any other pair of beeves ever fattened.

Their average weight at the age of three years was 1,850 pounds. After attaining this age, each received daily a peck of corn meal and wheat shorts, or oatmeal, combined, divided into two feeds, and, as dessert, a peck of sugar beets twice a day. In the summer, until lately, their only feed was grass supplemented with a little sweet hay. The second winter the daily feed of meal was increased to ten quarts each, given in two feeds. In the summer of 1869, each received one peck of meal per day, given at morning and at night; and in the winter following, twelve quarts of meal daily, in three feeds, besides roots. In their course of feeding they have had, in winter, the best of early cut hay from old meadows, and have usually had access to it in summer. They were not closely confined in winter, usually having the run of a small yard, with access to water, and with sheds under which they could lie protected from storms, and were tied at feeding time.

It is Mr. Ayrault's opinion that when cattle are fattening and it is desired to give them all the grain they will eat without being clogged, it is important to feed three times a day; and he considers beets, or their equivalent, essential in winter in promoting the growth of grain-fed cattle. He does not advise heavy feeding for beef until animals are well grown, his practice being to maintain his stock in merely thrifty condition until they reach the age of three years.

A committee of the Farmers' Club, American Institute, reporting on these cattle, state that they find that the only profit arising from the last year's growth of the animals lay in the increased or "fancy" rates obtained on account of magnitude, and that, in Mr. Ayrault's judgment, five years is the age at which fattened cattle will give the greatest profit to the feeder.

THE UPPER ARKANSAS VALLEY.

Lying concealed amid the loftiest peaks of the Rocky Mountains, in Southern Colorado, is a very remarkable and interesting little valley. As it is watered by the upper portion of the Arkansas River, it has received the name of the "Upper Arkansas Valley," yet in reality is a genuine park, being completely surrounded by a rim of lofty mountains, whose summits are partially covered by perennial snows. It is about forty miles in length and averages eight to ten miles in width, and

has an average elevation of about eight thousand feet above the level of the sea. It seems once to have been the bed of a large mountain lake, into which immense masses of boulders were precipitated from the western mountain rim; but the lake, bursting through the eastern rim, near Cañon City, gave vent to the accumulated watery mass, which, rushing down the main channel, has furrowed out these vast boulder deposits, leaving well-marked shore-lines, mounds, foot-hills, and beautiful little cross valleys. One of these little valleys, about eight or ten miles long and six or seven wide, is exceedingly beautiful and quite fertile. It has not escaped the keen eyes of the roving pioneers, for already it has a sufficient population to form a school district; and there, amid the dark gray basaltic peaks that shoot their sharp lines far above the mountain sylva, the eye is cheered with the sight of rosy youthful faces as they enter the common-school room.

As rich milk and delicious butter can be produced here as at any point in the Union. A luxuriant growth of nutritious grasses covers the entire valley, in fact nearly the entire park. At one point the *Pinus edulis* or pinōn, grows in abundance, and around the entire border runs a broad fringe of pines interspersed here and there with an aspen grove.

Irish potatoes and turnips yield abundant crops, of large growth and most excellent flavor. Barley can be raised, and produces a moderate crop; while oats come up fully to the western average. Wheat can also be grown; but spring wheat, being sown rather late, is sometimes injured in the fall by the frost; the introduction of winter varieties is remedying this difficulty. Other vegetables, besides those named, as cabbages, onions, &c., can also be very easily raised.

Although occupying such an elevated position, yet shielded, as the park is, by the surrounding mountain ranges from the bleak winds, its winter is comparatively mild, cattle being able to graze most of the year.

This little mountain valley possesses peculiar interest from the fact that it is surrounded by rich mines, which are just beginning to attract attention; and which ere long will doubtless create a demand for all the productions that can be raised on the arable portions of it. A mill is already in operation on one of the streams which cross the park.

COMMERCIAL FERTILIZERS IN CONNECTICUT.

The legislature of Connecticut at its last session enacted the following law concerning the manufacture and sale of commercial fertilizers in that State:

SECTION 1. Commercial manures sold, or kept for sale in this State, shall have affixed to every bag, barrel, or parcel thereof, which may contain fifty pounds or upward, an especial name or trade-mark by which the same may be known or designated, with the name and place of business of the manufacturers or seller, together with a true analysis or specification of the chemical elements, and their several amounts contained therein and also the quantity contained in the package.

SEC. 2. Any manufacturer or trader who shall sell or offer for sale any such package, and who shall neglect to affix such stamp, impress, or card, as is provided in section first of this act, or who shall affix a stamp, impress, or card, claiming five per cent. more of any fertilizing ingredient than is contained in the package, shall forfeit ten dollars for each and every one hundred pounds of the material so sold, or offered for sale, without the proper mark as directed in section first, to be recovered before any tribunal of competent jurisdiction, one-half to the State, and one-half to the prosecutor of the same.

SEC. 3. The provisions of this act shall not apply to fish pomace, nor to any manure prepared essentially from fish and sold as such, nor to any other commercial manure, which is sold at a price not exceeding one cent per pound.

SEC. 4. The secretary of the Connecticut Board of Agriculture is hereby authorized, at his discretion, to procure the analysis of any fertilizer offered for sale in this State, and to prosecute persons who violate the provisions of this act.

AGRICULTURAL IMPORTS.

Table showing the quantity and value of importations into the United States of the products named during the year ending December 31, 1869, compared with the corresponding imports of the year 1868, as reported by the Statistical Bureau.

Products.	Quantities.		Values.	
	1869.	1868.	1869.	1868.
Cotton, raw.....pounds..	1,348,331	297,168	$339,384	$44,898
Guano, except from American islands .....tons..	14,914	14,065	295,721	284,865
Gypsum, unground .....tons..	137,249	122,222	128,690	109,207
Madder, ground .....pounds..	20,835,291	24,848,098	2,543,734	2,597,386
root.....pounds..	355,345	303,025	46,237	34,707
Animals, living, of all kinds.....	.....	.....	4,124,360	3,066,117
Breadstuffs:				
Barley .....bushels..	6,589,676	4,303,951	5,325,285	4,848,937
Bread and biscuit.....pounds..	707,373	119,294	49,043	9,921
Indian corn.....bushels..	78,792	66,432	73,059	51,121
Indian meal.....barrels..	222	116	801	456
Oats.....bushels..	544,807	437,546	205,365	200,100
Rice .....pounds..	46,020,400	58,394,722	1,079,770	1,596,543
Rye .....bushels..	268,970	143,962	175,781	143,444
Rye flour .....barrels..	224	.....	773	.....
Wheat .....bushels..	638,715	1,634,403	685,351	2,440,999
Wheat flour .....barrels..	88,640	72,183	399,571	476,396
Potatoes.....bushels..	105,753	199,705	64,113	122,741
Macaroni, vermicelli, and all other preparations from breadstuffs	.....	.....	448,883	312,254
Cotton, manufactures of:				
Bleached and unbleached.....square yards..	27,762,057	21,129,870	3,633,069	2,875,655
Printed, painted, or colored...square yards..	24,408,940	15,194,523	3,386,791	2,186,567
Hosiery, shirts, and drawers.....	.....	.....	4,451,848	1,515,548
Jeans, denims, drillings, &c...square yards..	6,786,143	4,930,506	1,024,581	668,954
Manufactures not specified	.....	.....	9,509,700	9,452,919
Flax, and manufactures of:				
Raw .....tons..	1,854	2,183	642,498	762,518
By yard.....	.....	.....	14,079,307	11,650,974
Other manufactures.....	.....	.....	2,976,768	2,444,464
Fruit, of all kinds.....	.....	.....	8,094,604	6,619,437
Hemp, and manufactures of:				
Raw .....tons..	18,757	22,104	3,103,008	3,461,213
Manufactures of, by yards.....	907,029	1,467,350	142,928	240,484
Other manufactures of.....	.....	.....	226,711	238,927
Hides and skins, other than furs.....	.....	.....	14,204,761	9,961,999
Jute and other grasses, and cocoa fiber and manufactures of:				
Raw .....tons..	20,009	6,941	1,243,586	461,573
Manufactures of, by yards	.....	377,871	113,367	77,800
Gunny cloth and gunny bags.....pounds..	10,146,678	17,256,372	300,058	498,216
Other manufactures	.....	.....	1,233,527	1,603,160
Opium, and extract of.....pounds..	176,443	192,283	1,294,299	994,175
Paper:				
Printing .....pounds..	.....	.....	75,352	124,226
Writing.....	.....	.....	198,808	315,098
Other paper.....	.....	.....	234,600	201,112
Papier maché, and all other manufactures of paper	.....	.....	557,204	398,263
Silk:				
Dress and piece goods.....	.....	.....	11,923,087	8,973,743
Hosiery.....	.....	.....	38,017	23,786
Manufactures not specified	.....	.....	11,271,718	10,471,308
Sugar:				
Brown .....pounds..	1,298,591,717	1,135,236,568	62,492,837	51,694,817
Refined.....pounds..	1,028,971	426,554	70,045	40,050
Molasses.....gallons..	53,946,621	60,854,256	12,351,401	13,056,465
Melado and sirup .....pounds..	21,065,819	5,976,402	726,071	173,043
Candy and confectionery.....pounds..	48,694	42,015	13,974	10,338
Tobacco:				
Leaf.....pounds..	5,904,547	5,844,051	2,295,969	1,811,639
Cigars .....pounds..	474,548	354,784	1,471,819	1,029,958
Snuff .....pounds..	18,666	18,130	6,251	6,256
Other manufactures of.....	.....	.....	14,247	37,933
Wool, sheep's, goats' and camels' hair, and manufactures of:				
Raw and fleece .....pounds..	49,812,392	26,449,321	7,171,075	4,031,370
Cloths and cassimeres.....	.....	.....	7,688,348	5,867,363
Woolen rags, shoddy, &c.....pounds..	796,652	585,865	69,317	47,436
Shawls.....	.....	.....	1,942,795	1,419,203
Blankets.....	.....	.....	22,854	20,421
Carpets .....yards..	3,881,830	3,731,497	4,261,258	3,616,716
Dress goods .....yards..	63,274,338	59,310,851	15,663,362	14,890,667
Hosiery, shirts, and drawers.....	.....	.....	466,368	396,274
Manufactures not specified.....	.....	.....	4,940,105	4,833,855

EXPORTS FROM ODESSA.

A table of the exportation of grains, seeds, wools, and stuffs from the port of Odessa in 1869.

Destination.	Wheat.	Rye.	Indian corn.	Barley.	Oats.	Peas.
Turkey, Greece, and Egypt	101, 185	.....	.....	.....	.....	8, 928
Mediterranean	1, 205, 290	.....	23, 808	139, 873	318, 435	44, 045
The United Kingdom	5, 083, 051	107, 137	860, 071	404, 739	279, 746	6, 547
The Continent	35, 712	.....	.....	.....	.....	.....
Sweden and Norway	23, 808	95, 233	.....	.....	.....	.....
Total in bushels	6, 449, 046	202, 370	883, 879	544, 602	598, 181	59, 520
Exportation in 1868	7, 297, 213	523, 780	958, 280	660, 678	1, 684, 430	122, 017
Exportation in 1867	16, 806, 208	2, 588, 546	476, 164	221, 416	86, 305	35, 117

Destination.	Flour.	Flaxseed.	Cobza and rape.	Totals.	Wools.	Stuffs.
					Pounds.	*Pounds.*
Turkey, Greece and Egypt	479, 140	.....	1, 786	591, 039	.....	.....
Mediterranean	23, 808	238, 082	12, 499	2, 005, 840	.....	.....
The United Kingdom	77, 377	851, 143	204, 751	7, 874, 562	.....	.....
The Continent	.....	136, 897	19, 047	191, 656	.....	.....
Sweden and Norway	.....	.....	.....	119, 041	.....	.....
Total in bushels	580, 325	1, 226, 122	238, 083	10, 782, 138	11, 036, 698	8, 007, 015
Exportation in 1868	482, 116	1, 970, 129	380, 931	14, 079, 574	10, 675, 921	7, 682, 407
Exportation in 1867	517, 233	1, 315, 403	571, 397	22, 617, 789	8, 995, 269	7, 624, 699

Tchetverts — Tschetwerts = 5. 95205 bushels. Poud — Pud = 36. 06764 pounds.

POMOLOGY IN WURTEMBERG.

C. Schickler, president of the Horticultural Society "Flora," sends to the department the following statement relative to pomology in Wurtemberg:

Wurtemberg may be called one of the largest fruit-growing countries in Europe. In very good and prosperous fruit years, as will happen once or oftener in every decennium, (1860, 1864, 1869,) the crop amounts to from three to four hundred weight of fruit for every head of our population. The very perceptible saving in cereals and other provisions during such years reduces their prices, increases the export, and has caused our farmer's adage: "*Cheap times come out of the wood.*"

Our fruit cultivation pervades every district. The orchards increase in number and size every year, not only in the river valleys but on the hill slopes and mountains, so that you may now see fine and remunerative orchards two thousand and two thousand four hundred feet above tide-water, where it was formerly thought that no fruit could prosper.

The most fruitful sections are found along the shores of the Neckar, north of the Alb, and generally on the northern and northeastern slopes of the hills, which prove most propitious for fruit.

According to official statistics, as far as obtainable, there were in Wurtemberg during the year 1852, of seed fruit, 5,000,000 trees, with a yearly crop of 8,000,000 hundred weight of fruit; and of stone fruit, 3,500,000 trees, with 2,000,000 hundred weight of fruit. Since then the number of trees has increased very much. In some districts there are from eighty thousand to one hundred thousand fruit trees upon a square mile. The city of Stuttgart counts upon a horticultural area of five thousand four hundred and forty-five acres, about one hundred and ten thousand fruit trees. The crops in different years vary from 590,000 to 19,400,000 sei, (three sei per hundred

weight,) and as the price per hundred weight varies between one and three thalers, gold, (about one dollar to three dollars of our currency,) the average crop of fruit represents a value of six to seven millions of thalers.

The greatest danger to fruit crops lies in the spring frosts during the blooming season; yet as this season varies nearly four weeks in the different sections, it is easily understood that frequently one county has plentiful crops, whilst another has a failure, but general failures are rare. For the same reason it is evident that the warmest districts are not the most favorable for fruit cultivation, as the earlier the time for blooming, the greater is the danger of frosts; and for the same reason it is exceptional when good fruit and wine crops are produced the same season, as the former prospers best under late vegetation and a wet summer, while wine requires early vegetation and a dry and warm season.

The yield of cider and dried fruits is considered with us as of great importance, but table fruit is also extensively cultivated in some sections, *i. e.*, "Rems hal," "Neckar shal." The apple crop is the most useful of all. There is also some export of this crop, as well as of fresh cherries, into Bavaria.

The cherry tree is among the stone fruit most cultivated in the valleys of the Alb and Rems. The prune tree* (Zwetschenbaum) is very common all over the country, and yields the most valuable fruit for drying. The year 1868 abounded in all kinds of stone fruit, especially prunes. The walnut tree (English walnut) prospers most on the slopes of the Alb, and yields good crops and fine cabinet wood. Peaches and apricots are raised in vineyards and gardens, in the former as standards, in the latter as wall fruit.

A great advantage and ornament is derived from the planting of fruit trees all along the roads of the country, the trees being mostly owned by neighboring farmers.

To promote pomology there are several nurseries, and in the vineyards there are raised a great many young fruit trees, yet the demand is greater than the supply, and there are every year great quantities imported from Bavaria, Baden, and France.

The tree fairs every spring in Esslingen, Rentlingen, Goeppingen, and Stuttgart are interesting and peculiar features of Wurtemberg. The prices of young trees vary considerably. Trees which, from 1848 to 1852, sold at six to ten kreutzer (three to five cents) each, now sell at one to one and a-half gulden, (thirty to forty-five cents.) The average price of young apple trees is forty-two kreutzer (twenty-five cents) each; pear trees forty-eight krentzer, (twenty-eight cents;) cherry or prune trees eighteen kreutzer, (ten cents,) varying with the quality of the tree.

Some years ago a school for pomology was established, which proves of great value.

The greatest portion of the fruit crop is used for cider, the favorite beverage of the farmer. This cider keeps very long, if made of certain species, as, for instance, the orange pear, wax pear, roast pear, sugar apple, Borsdorfer apple, Reine-Hen apple, &c.

In unfavorable years, and even in average years, during the last decennium, large quantities of fruit have been imported from Switzerland, Baden, and Hessen, to answer the steadily increasing demand for cider. Esslingen alone produces in good years 10,000 eimer, (800,000 gallons,) mostly of sugar apple. A sugar apple tree is known to have yielded from eighty to one hundred sei (twenty-six to thirty-three hundred weight) of apples, at a value of 600 to 1,000 gulden, ($300 to $500.)

The industry of distilling liquor from cherries and prunes (kirshengerst and zwetschengeist) is also lucrative and important.

EXHIBITION OF AGRICULTURAL IMPLEMENTS AT ARNHEIM.

During the session of the agricultural congress of the Netherlands there will be held at Arnheim, in June, July, and August of the current year, an international exposition of agricultural machinery and implements, the first of the kind held in the Netherlands. All kinds of agricultural implements will be admitted, as well as those applicable to horticulture, forest arboriculture, live stock, and dairy produce, with plans and designs explanatory of articles exhibited.

Foreign exhibitors must be represented by local agents living in the Netherlands, and it is requested that the secretary of the committee be notified by mail before the 1st of May of the intention to exhibit, with the

*Our prune tree does not prosper in America, neither from seed nor from imported cuttings, but always degenerates into *damsons*.

sale price of the article and an exact description of the object, the length, breadth, and height given in meters.*

Articles must be forwarded without cost to the committee, so as to be placed in the exposition from the 1st to the 15th of June. Exhibitors will be allowed by the committee to set their machinery in motion at their own expense. A moderate rent will be charged for the space occupied.

The committee will take care of articles without guarantee against damage or loss, but will insure articles against fire.

The Exposition will be opened to the public on the 27th of June, and continue open daily until the 14th of August. On the day after the close of the Exposition exhibitors will remove articles not sold, and such as are not so removed before the 1st of September will be stored at the expense of the exhibitor. Articles not claimed by the 10th of of September will be sold at auction, and the proceeds be devoted to the support of the poor of the city.

All sales must be made by the committee, and for cash. By authority of the King, the committee propose to organize a lottery for the sale of articles bought at the exposition, twenty-five thousand lots at one florin each.

Honorary diplomas will be given to a limited number of exhibitors designated by the jury.

Detailed particulars may be obtained by addressing the secretary, J. Nagel jr., Arnheim; or A. Mazel, minister of the Netherlands, Washington, D. C.

CATTLE PLAGUE IN EUROPE.

The intelligence received from eastern Europe relative to the extent and progress of the cattle plague is far from being reassuring. It was hoped that all danger had passed with reference to an extension of the malady from the western and southwestern parts of Poland into Prussian Silesia, but recent information shows that the Prussian government has found it necessary to extend its precautionary measures in that direction, and to have the frontier guarded by troops from Neuberun, in Silesia, to Weischinic, in the department of Posen. Not only is Prussia threatened by an invasion of the disease in her southeastern provinces, but also in her northeastern, as the plague has extended in Russia as far northward as Knovno. To meet this new source of danger the government has dispatched troops to guard the frontier from Tilsitt to Pillkallen, in East Prussia. Poland is suffering to a great extent from this visitation of the plague, as is likewise Galdicia, Transylvania, and Buckoweria.

SCIENTIFIC NOTES UPON NATURAL HISTORY.

The following items are from scientific sources in recent foreign publications:

Dredging the Atlantic.—In August, 1869, some very curious facts were communicated to the British association, respecting the bed of the Atlantic, by Professor Thomson. He started on an expedition from Belfast for the purpose of determining, if possible, the great questions of

* Meter, 39 inches.

the distribution of temperature, &c., and of the conditions suitable to the existence of animal life at great depths in the ocean.

After leaving Cork the vessel stood out two hundred miles to the southwest of Ushant, with admiralty soundings marked at two thousand fathoms. At a depth of two thousand four hundred and thirty-five fathoms Atlantic chalk mud was met with, and a temperature of 36.5° Fahrenheit noted. At another dredge, at a depth of two thousand fathoms, the temperature was 36.4°.

The results obtained are among the most interesting that have been made in natural science. In reference to temperature Professor Thomson says:

The superheating of the sun extends only to the depth of about twenty fathoms. Another cause of superheating, probably the Gulf Stream, extends to the depth of from five hundred to seven hundred fathoms; after that the temperature gradually sinks at the rate of 0.2° (two-tenths of a degree) for every two hundred fathoms. This is, probably, the normal rate of decrease, any deviation being produced by some special cause, a warm or cold current.

In regard to the aëration of the water, Mr. Hunter, who accompanied Professor Thomson, states that he found the water from great depths to contain a large excess of carbonic acid, and that the water from all depths contained a considerable proportion of dissolved organic matter, thus in every way bearing out the observations of Mr. Carpenter during the first cruise for this object.

As to the distribution of animal life he remarks:

Life extends to the greatest depths, and is represented by all the marine invertebrate groups. At two thousand four hundred and thirty-five fathoms we got a handsome *dentalium*, one or two crustaceans, several annelids and zephyrea, a very remarkable new crinoid with a stem four inches long, (I am not prepared to say whether a mature formed or a *pentacrinoid*,) several star fishes, two hydroid zoophytes, and many foraminifera; still the fauna has a dwarfed and Arctic look. This is, doubtless, from the cold, At eight hundred to nine hundred fathoms, with a temperature of 40° Fahrenheit and upward, the fauna is rich, and specially characterized by the great abundance of vitreous sponges, which seem to be nearly related to, if not identical with, the *ventriculites* of the chalk.

The result of the year's work has been to bring to light many forms new to science, and many new to the British *fauna*. Among the most remarkable groups I have been working at I may mention a very singular *echinoderm*, representing a totally new group of the sub-kingdom, a splendid new *ophiurid*, many specimens of Sars' *rhizocrinos loffotensis*, many vitreous sponges, including specimens of *aphrocallistes*, *holtenies*, and *hyalomena*, a fine *solarium* from the coast of Kerry, and many other things.

The results of Professor Thomson's researches entirely upset the long-maintained opinion that animal life was impossible at great depths in the ocean.

Floating Tunicates of the Atlantic.—In an interesting paper on the tunicated animals of the Atlantic of the order *salpidæ*, Mr. Cuthbert Collingwood describes some beautiful appearances to be observed as follows:

On one occasion when the sea was dead calm, and I was watching the floating tunicates, and fly drozos, though the ship scarcely moved, my attention was arrested by a magnificent object hovering at some distance below the surface. It had the appearance of a long, convoluted, and delicate chain of gems, of the most brilliant colors, which waved gracefully in the currents of water. It might be compared to a necklace of diamonds, set in rubies, and although not the organism to which the name of *cestus veneris* has been given, it might have been the jewelled girdle of Venus falling from her as she rose from the sea. Not far from it was another object, if possible, even of greater beauty, consisting of five or six dolpiform bodies, arranged in oblique line, each of a bright and delicate emerald green color as clear as crystal, and possessing a large red ruby spot, which shone in the water like a row of magnifient carbuncles. There can be no doubt that these exquisite objects were chains of *salpæ*, of a character unknown to the scientific naturalist, though they may have often charmed the eyes of the becalmed sailor, and they illustrate the unknown riches and infinite variety of the creatures which lie concealed in the impenetrable depths of the inscrutable ocean.

Rise of Sap in Trees and Plants.—The nature of capillary or hair-like attraction, has long been known and satisfactorily studied. It is easily illustrated by placing a lump of loaf sugar in a plate containing a little water, when the liquid will almost instantaneously rise to the sugar, even two or three inches beyond its level. On this principle the rise of sap in plants and trees has been explained. The celebrated philosopher, M. Berquerel, considers that electricity is an acting cause. A capillary tube that will not allow water to pass through it, does so at once on being electrified, and he conceives that electro-capillarity is the efficient cause of sap traveling in vegetable life.

Milk under the Microscope.—Apart from the adulteration milk undergoes, there are several changes that unfit it for food. If the surface of fresh cream be examined under the microscope, M. Essling finds that just such appearances are presented as are seen in most substances undergoing putrefaction. In summer such a change takes place in from fifteen to twenty-four hours after milking, and in winter it will be perceptible after the lapse of two or three days. If the observation be continued until the moment of coagulation, the corpuscles increase in number, from ramified chains, and at length are transformed into regular mushrooms or filaments composed of cells placed end to end in simple series, and supporting at their extremities a spherical knob filled with grain-like matter. M. Essling thinks that such may be classed among the *Ascophora*. The first appearance of these spores occurs before the milk gets sour, and as children largely feed on milk it is possible that many of their gastric affections may arise from this cause. The milk of animals should therefore be drunk as soon as possible after being drawn, or kept in close-corked vessels until required for use, so as to be entirely excluded from the external air.

Velocity of Insects' Wings during Flight.—M. E. Marey has made some curious investigations on this subject. Much doubt has arisen as to the cause of the humming sound produced by insects, but which is generally supposed to be caused by the vibrations of the wings during flight. To ascertain their velocity, M. E. Marey adopted the following plan: The insect was grasped at the back by a pair of fine nippers, and when it sought to fly one of its wings was directed in such a way that it rubbed its point against the surface of a smoked cylinder which revolved with a known velocity. The wing at each of these revolutions carried away a little of the black smoke which covered the cylinder, and left a trace of its passage. The result of the experiments, allowing in regard to their accuracy for a variety of distracting causes, was to show the following number of beats per second for the wings of each insect: The common fly 330, the drone 240, the bee 190, the wasp 110, the hawk-moth 72, the dragon fly 28, and the cabbage-butterfly, which is inaudible, 9 beats per second. By other variations of the experiments he arrived at similar results.

Oyster culture.—The enormous price of oysters during the past few years has greatly stimulated their artificial culture. Very recently some interesting experiments have been conducted by Captain Ross, chairman of the Brading Harbor Oyster Fishery Company, at the Isle of Wight. The first attempt was directed to discover the nature of the favorite food of the oyster, and for this purpose two cisterns were fitted up to contain the animal. One of these cisterns was supplied with filtered sea-water, the only vegetable matter present being a few pieces of sea-weed. The other tank was supplied with water direct from the harbor. Another tank was fitted up as a kind of infirmary, to which the parent oyster was committed during the process of its emitting

the "spat," the technical name of its young. The water in this tank was kept perfectly still, and every care was taken to maintain the temperature as uniform as possible; thermometers and other instruments, still more sensitive, were used. Captain Ross tested the effects of electricity by transmitting currents through water containing infusoria, and it was found that their production was rapidly increased by such means. Consequently, a series of constant electrical currents were transmitted through the tanks containing the spat, or young oyster, in the hope that a similar stimulating effect might be produced in relation to its growth and development. The experiments are still in progress, with promise of favorable results.

FACTS FROM VARIOUS SOURCES.

Mr. L. G. Olmstead, of New York, gives the following statement of a simple and convenient method of bleaching beeswax that he saw practiced in Italy:

The yellow wax is first melted in a kettle, and then is dipped out into a long tin vessel that will hold two or three gallons, and which has a row of small holes about the diameter of a knitting needle in the bottom. This vessel is fixed over a cylinder of wood two feet in length and fifteen inches in diameter, which is made to revolve like a grindstone in one end of a trough of water two and one-half feet in width, ten to fifteen feet in length, and one foot in depth. As the melted wax falls in small streams on this wet revolving cylinder it flattens out into a thin ribbon and floats off toward the other end of the trough of water. It is then dipped out with a skimmer, (that may be made of osier twigs,) spread on a table with a top made of small willow rods covered with a clean white cloth, and then exposed in this way to the sun until bleached.

Mr. Legoyt, chief of the department of general statistics of France, in an interesting report published in 1868, upon the agriculture of France at different periods, says that the increase in the production of wheat in 1862, compared with 1840, was thirty three per cent., and the decrease in the production of rye twenty-five per cent. In the same period the average yield of wheat per acre increased from 13.9 to 16.3 bushels, and potatoes were more largely cultivated by thirty-four per cent. The cultivation of the sugar-beet root in France increased from 140,852$\frac{3}{4}$ acres in 1840 to 336,069$\frac{6}{7}$ acres in 1862, or one hundred and thirty-eight per cent. It appears from the same report that there are 3,800,000 proprietors of land in France, and that in 1866 there were 3,226,000 farms; of this number fifty-six per cent. contained less than twelve and a half English acres of land. The average extent of all the farms in France (exclusive of forests) was twenty-six and a quarter acres. The number of leased farms in 1862 was 568,000.

Information recently laid before Parliament embraces some interesting facts relating to tenant farms in Ireland. The whole number of farms is 682,000. There are 512,080 farms of less value than £15 a year; 94,098 are valued at £15 and under £30; 38,534 at £30 and under £50; 24,857 at £50 and under £100; 72,668 at £100 and upward. This valuation is supposed to be the basis of poor-rate assessments, and at least twenty per cent. below the actual letting value. Of these farms 526,539 are tenancies at will; lease for twenty-one years or a less term, 25,406; lease exceeding twenty-one and under thirty-one years, 22,217; exceeding thirty-one and under sixty years, 4,312; exceeding sixty and under ninety-nine years, 5,497; exceeding ninety-nine years, 3,903; for lives, 28,339; for lives, alternative, 30,880; renewable forever, 4,540; perpetuity, 10,128; in occupation of proprietors in fee, 20,217.

Forty-two auction sales of shorthorns were held in England, Scotland, and Ireland in 1869, at which 1,585 head were sold at prices ranging from 3½ to 650 guineas. The average realized being £35 5*s.* each, showing but a slight variation from the average price obtained in 1868, when 1,423 were sold at an average of £35 7*s.* each.

The highest prices ever known to have been realized in England for shorthorns were obtained by Mr. Sheldon, of Geneva, New York, United States, for six Duchess, sold to Messrs. Wallcott & Campbell, for the sum of 1,100 guineas each.

From statistical reports it appears that in 1868 there were in the Australian colonies 3,915,000 cattle, and 47,600,000 sheep. This number as compared with the number returned in 1867, shows the enormous increase of 4,000,000 of sheep in one year. The latest returns from the Cape of Good Hope give 692,000 cattle and 9,836,000 sheep in that colony. Comparing the number of sheep and the amount of wool exported in 1867, it shows in Australia an average weight of wool exported of 3.75 pounds to each head of sheep, and at the Cape of Good Hope 3.65 pounds per head of sheep.

METEOROLOGY.

COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain or melted snow, (in inches and tenths,) for February and March, 1870, at the stations named. Daily observations made at 7 a. m., and 2 and 9 p. m.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
MAINE.		°		°	°	*In.*		°		°	°	*In.*
Houlton	19	50	4	—40	16.7	7.50	20	56	12	—18	26.2	5.70
Steuben	20	56	4, 14	— 5	23.0	4.45	31	51	12	—13	29.9	4.21
Orono	15, 19	44	4	—15	18.2	4.30	30	52	12	— 6	27.9	2.11
Williamsburg	19	43	4	—21	16.7	6.95	20	48	12	—15	27.3	3.45
W. Waterville	15	46	4	—17	20.5	5.70	30	50	12	— 7	29.7	3.15
Gardiner	19	46	5	—10	21.5	5.93	30	47	12	— 2	28.6	3.22
Lisbon	15, 20	49	5	—12	21.9	5.30	31	56	12	3	29.5	2.50
Norway	15, 18	42	5	—14	18.8	6.59	30	52	12	0	28.4	4.60
Cornish	15	46	5	— 3	20.3	5.30	30	51	11	4	28.0	5.15
Cornishville	18	44	4, 22	— 2	21.3	6.40	30	50	11	7	28.5	4.80
Averages					19.9	5.84					28.4	3.89
NEW HAMPSHIRE.												
Stratford	15, 18	38	4	—12	15.4	5.19	31	54	12	—18	23.7	2.44
Whitefield	12	43	4	—12	16.4	2.92	31	55	12	—18	24.3	2.65
Hanover	18	31	22	—17	5.8	.....	.....	.....	.....	.....	.....	.....
Tamworth	15	52	5	—20	18.2	7.55	30	50	4	— 4	26.8	4.38
Concord	18	47	4	— 5	23.0	3.08	29	54	5	9	30.0	3,33
Goffstown Center.	12	46	22, 25	4	23.0	6.01	20	60	11	10	29.8	3.74
Averages					16.9	4.95					26.9	3.31
VERMONT.												
Lunenburg	18	44	2	—13	15.1	5.00	31	52	12	—15	23.9	2.01
North Craftsbury.	18	40	4	—16	13.2	5.47	20	48	12	—10	21.9	0.95
Newport	18	42	4	—29	15.9	6.70	20, 31	50	12	—18	23.4	1.50
East Bethel	12	44	5	—13	17.3	4.44	30	53	4	— 4	26.5	1.39
Woodstock	18	43	4, 24	— 9	16.1	5.21	30	52	4, 6	— 3	23.7	2.60
Near St. Albans	18	42	4	—29	15.0	.....	30, 31	51	12	—14	23.7	.....
West Charlotte	15	49	4	— 6	22.1	4.83	29, 30	52	11	— 4	29.2	2.26
Middlebury	18	42	4	— 3	19.7	3.74	31	51	11	4	26.8	2.11
Panton	18	43	4	— 6	19.1	4.24	31	50	4, 11	2	25.2	2.67
Castleton	18	46	4	— 2	20.2	3.15	30, 31	51	11	6	27.2	2.89
Averages					17.4	4.75					25.2	2.04

Table showing the range of the thermometer, &c., for February and March—Continued.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
MASSACHUSETTS.		°		°	°	*In.*		°		°	°	*In.*
Kingston	18	54	22, 25	7	28.5	4.00	28	54	6	12	31.0	4.77
Topsfield	12	44	4, 14, 25	4	23.2	5.98	21, 22	50	4	9	29.6	4.64
Lawrence	15	45	4	4	22.4	3.91	22, 30	50	12	13	30.3	5.72
Newbury	15	50	4	4	25.1	.....	.....	.....	.....	.....	.....	.....
Georgetown	15	46	4	0	23.3	7.89	.....	.....	.....	.....	.....	.....
Milton	18	54	25	9	27.1	4.64	22	61	4	13	32.8	3.07
Cambridge	1	53	22	3	27.3	.....	21, 22	56	4	13	33.8	.....
North Billerica	15, 18	50	27	3	25.5	.....	30	52	6	10	31.7	.....
West Newton	18	54	2, 25	6	27.6	.....	.....	.....	.....	.....	.....	.....
New Bedford	15	52	22	8	28.7	4.36	20, 22	48	4	13	31.6	3.16
Worcester	18	50	22	3	25.5	3.04	31	47	11	10	29.3	2.54
Mendon	18	52	22	4	23.3	3.95	21	48	4	12	28.2	3.60
Lunenburg	15	49	25	0	23.8	4.25	21	54	11	10	30.4	4.35
Amherst	18	55	25	6	25.3	5.25	31	51	6	7	30.9	2.71
Richmond	18	48	25	0	22.3	6.47	21	56	15, 25	10	29.6	7.64
Williams College	12	45	4	— 3	21.9	5.80	31	50	15	2	26.3	4.76
Hinsdale	18	48	25	— 8	19.2	6.15	21	50	11	6	23.6	5.90
Averages	.....	.....	.....	.....	24.7	5.05	.....	.....	.....	.....	29.9	4.39
RHODE ISLAND.												
Newport	15	50	22, 25	11	30.2	5.32	31	50	4	21	33.2	3.95
CONNECTICUT.												
Columbia	7	56	22	6	28.3	7.22	21	56	4	16	32.3	7.58
Middletown	18	56	22	6	27.1	4.86	20	54	6	12	29.3	5.58
Southington	.....	.....	.....	.....	.....	.....	20, 21	53	.....	.....	36.9	.....
Colebrook	18	45	22	— 3	21.5	5.41	20	52	11	9	26.8	.....
Brookfield	18	58	22	8	30.8	7.80	21, 22	55	3, 4, 17	18	33.0	3.50
Averages	.....	.....	.....	.....	26.9	6.32	.....	.....	.....	.....	31.7	5.55
NEW YORK.												
Moriches	15	55	22	8	34.8	3.61	15, 31	59	6	16	36.7	4.14
South Hartford	12. 18	48	4	— 2	22.7	3.73	31	59	15	1	29.4	3.58
Fort Edward	7, 17	50	4	2	25.3	.....	30	63	4, 15	6	32.2	.....
Vassar College	.....	.....	.....	.....	.....	.....	31	56	9	5	30.4	.....
Garrison's	18	57	22	7	28.0	6.78	31	56	4	15	34.4	5.74
Throg's Neck	18	54	22	10	31.1	.....	31	58	17	18	35.1	.....
White Plains	12, 15, 20	47	22	11	31.2	.....	.....	.....	.....	.....	.....	.....
Deaf & Dumb Ins.	18	52	22	11	30.8	4.47	31	54	4	22	35.6	4.17
Columbia College	18	50	21, 22	12	31.0	7.39	21	54	3	20	33.6	2.29
Rutger's Fem.Col.	18	60	22	10	34.4	4.27	21	60	17	20	37.1	3.25
Flatbush	15	48	25	13	29.7	4.27	22	51	2	17	32.7	2.19
Glasco	12	47	22	6	26.7	6.84	31	58	6	17	30.7	8.43
Newburg	18	54	22	8	29.9	4.50	31	58	6	12	33.1	3.40
Minaville	18	39	22	— 6	20.1	4.90	31	52	4	4	25.5	6.39
Cooperstown	18	45	21	— 2	20.3	3.72	20	55	15	— 8	25.0	2.53
Gouverneur	17	43	4	—20	17.6	2.73	20	56	11	— 9	24.9	2.79
North Hammond	17	45	4	— 6	18.7	3.11	31	50	11, 12	— 4	26.1	2.75

Table showing the range of the thermometer, &c., for February and March—Continued.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
NEW YORK—Con.		°		°	°	*In.*		°		°	°	*In.*
Houseville	18	42	11	— 6	18.1	2.87	31	58	11	— 2	25.7	3.60
Leyden	18	38	3, 21	— 4	16.4	4.05	31	45	11	2	23.7	4.30
Utica	18	41	25	8	24.7	5.33	30, 31	57	3	8	29.8	4.09
South Trenton	18	40	11,13,25	2	19.4	2.91	29	50	15	2	24.1	4.13
Cazenovia	18	42	21	3	22.1	.....	31	50	3, 15	0	26.0	6.13
Oneida	18	46	13	6	24.2	5.60	20	56	15	5	29.1	3.40
Depauville	18	43	4	— 4	19.5	4.42	20, 30	49	11	2	26.0	4.68
Oswego	17	44	21	7	21.3	1.98	20	46	11	10	28.4	2.92
Palermo	17	43	4	— 5	20.3	4.10	31	52	3	2	25.4	3.80
North Volney	17	44	4	— 2	22.4	.....	31	54	11	7	27.6	.....
Waterbury	17	44	4	— 9	21.9	.....	30	56	14	— 2	25.9	.....
Nichols	12	45	23	— 3	24.8	.....	31	56	19	1	29.0	.....
Newark Valley	18	46	23	— 8	23.3	4.90	31	54	19	— 8	27.2	4.80
Himrods	17	42	4	— 2	22.3	4.50	31	47	3	5	26.2	4.13
Rochester (M.)	17	47	19, 21	6	24.7	3.38	31	51	15	10	29.2	4.66
Do. (F.)	17	48	21	2	24.0	2.67	.....	.....	.....	.....	.....	.....
Little Genesee	17	43	23	—16	21.5	3.98	31	56	19	— 9	26.8	4.05
Suspension Bri'ge	17	48	21, 22	3	25.0	.....	19, 20	48	19	12	28.2	.....
Buffalo	17	45	21	3	25.0	2.22	26	55	3	11	30.1	5.41
Averages	.....	.....	.....	.....	24.4	4.19	.....	.....	.....	.....	29.1	4.14
NEW JERSEY.												
Paterson	18	53	22	7	29.5	5.26	30	58	17	18	34.3	5.56
Newark	18	53	22	10	30.7	4.27	21	55	4	18	34.8	4.56
New Brunswick	18	57	21, 22	10	30.5	3.37	.....	.....	.....	.....	.....	.....
Trenton	18	60	22	12	34.8	3.20	21	60	3	23	38.1	3.09
Rio Grande	2,12,15	52	22	12	34.6	4.48	30	52	6	22	36.5	5.43
Moorestown	18	58	22	9	32.3	2.97	20, 21	60	3	20	35.5	3.48
New Germantown	18	54	22	5	29.2	2.63	30	55	17	16	33.1	2.64
Lesser Crossroads	18	56	22	9	31.4	.....	.....	.....	.....	.....	.....	.....
Haddonfield	18	59	22	12	33.1	2.22	21	59	3	22	35.8	3.91
Newfield	18	57	22	5	33.3	.....	20	63	3, 5, 6	21	36.3	.....
Greenwich	18	54	22	12	35.0	3.01	21	61	3, 5	23	37.9	3.45
Vineland	20	58	22	0	33.2	2.88	21	60	5	23	36.5	3.10
Averages	.....	.....	.....	.....	32.3	3.43	.....	.....	.....	.....	35.9	3.91
PENNSYLVANIA.												
Nyces	18	48	21	— 5	22.7	3.67	30	52	2	7	26.7	3.93
Hamlinton	18	52	21, 22	6	27.1	3.98	20	56	17	14	30.3	4.15
Dyberry	18	49	23	— 2	26.8	3.75	21	56	19	1	27.4	3.35
Fallsington	18	60	22	10	33.0	2.60	20	56	6	20	36.0	3.60
Philadelphia	18	59	22	13	34.8	2.56	21	61	3	23	37.9	4.52
Germantown (M.)	18	58	22	7	32.9	.....	21	54	3, 9, 17	20	35.5	.....
Do. (T.)	18	60	22	12	33.3	5.43	21	59	3, 4, 9	23	36.0	3.20
Horsham	18	56	22	9	31.8	3.35	21	59	3	21	33.6	3.53
Plymouth Meet'g.	18	59	22	10	32.0	2.89	21	61	3	21	34.7	4.64
White Hall	18	54	22	5	30.6	.....	30, 31	58	17	14	33.3	.....
Factoryville	12, 18	46	23	— 2	24.6	4.20	31	56	17	— 4	28.2	3.67

Table showing the range of the thermometer, &c., for February and March—Continued.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
PENN'A—Con'd.		°		°	°	*In.*		°		°	°	*In.*
Reading	18	60	22	10	33.9	5.88	31	60	17	22	37.5	4.61
West Chester	18	58	22	6	31.2	3.89						
Parkersville	18	52	22	9	31.9	3.55	21	54	10	19	35.4	2.91
Ashland	18	54	22	1	27.5	7.10	30	61	17	13	32.0	4.80
Tamaqua	18	53	21	— 1	26.4	.....	21	57	16	5	30.5	.....
Ephrata	18	57	22	6	32.3	3.49	30	56	3	19	34.4	3.73
Mount Joy	13	60	22	12	34.1	.....	30	67	16	22	38.3	.....
Harrisburg	12, 18	55	22	9	34.3	4.12	30, 31	62	17	19	39.0	3.76
Carlisle	16, 17	50	22	7	31.8	4.35	21	60	16, 17	19	36.7	3.95
Fountain Dale	12	51	21	6	31.0	3.50	21	58	17	17	35.5	4.92
Tioga	12, 18	48	21, 23	—10	23.5	3.50	31	54	17	— 8	29.2	3.95
Williamsport	18	48	22	6	29.7	.....						
Lewisburg	12	48	23	— 1	26.8	4.39						
Grampian Hills	17	42	23	— 8	22.1	4.54	30	50	3, 16	8	27.0	3.99
Johnstown	17	50	21	0	28.3	5.01	11, 30	54	15, 19	14	31.0	3.92
Franklin	17	49	21, 23	0	25.6	4.07	30	56	3	12	31.7	4.58
Pittsburg	17	55	21	4	31.1	3.40	12	57	16	16	35.0	3.20
Connellsville	17	55	21, 22	0	28.6	.....	30	58	16	12	32.3	.....
Brownsville	17	60	22	0	31.4	1.83	30	58	16	17	38.0	.....
New Castle	14, 17	45	21	3	27.1	3.20	30	54	16	15	33.4	3.10
Beaver	16	51	21	5	30.4	2.80	12, 30	54	16	12	37.0	3.00
Canonsburg	17	54	21	0	30.2	3.46	30	63	16	11	35.3	3.25
Averages					29.7	3.87					33.6	3.84
DELAWARE.												
Milford	18	60	22	13	36.4	2.70	20	62	5, 6, 17	27	39.8	3.88
MARYLAND.												
Woodlawn	18	58	22	7	31.9	3.44	21	61	3, 17	20	35.8	3.21
Annapolis	2	56	21, 22	11	37.7	4.52	21	64	3, 9, 17	24	47.6	3.17
St. Inigoes	18	60	22	11	35.8	2.36						
Frederick	17	55	21	13	36.7	3.42	21	65	7, 9, 17	28	42.2	1.77
Mt. St. Mary's	12	52	21	5	30.9	3.70	21	60	16	16	36.0	3.38
Averages					34.6	3.49					40.4	2.88
DIST. COLUMBIA.												
Washington	18	52	21	13	38.9	3.03	21	57	9, 17	26	40.3	3.70
VIRGINIA.												
Johnsontown	15	60	21, 22	17	39.7	3.10	27	61	6, 10	28	43.5	4.08
Hampton	18	65	22	16	41.5	3.10	20	66	3, 9, 10	28	43.3	2.70
Zuni Station	18	68	22	18	42.2	3.27	27	64	10	26	44.1	3.61
Bacon's Castle	18	73	22	16	42.1	8.93						
Comorn	18	60	21, 22	14	37.1	1.51	20, 21	64	6	27	42.2	1.78
Vienna (W)	17	55	21, 22	9	36.0	2.10	21	67	16, 17	23	40.3	3.70
Do. (B)							21	64	17	22	40.0	4.00
Fairfax C. H.	17	60	22	10	32.5	2.20						
Piedmont	12, 17	54	22	5	34.6	2.80	21	64	17	16	38.3	3.70

Table showing the range of the thermometer, &c., for February and March—Continued.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
VIRGINIA—Con.		°		°	°	*In.*		°		°	°	*In.*
Piedmont Station.	2	56	22	1	30.7	2.55	21	67	17	18	39.2	5.35
Staunton	26	57	21, 22	11	36.1	2.30	21	60	17	19	39.1	3.66
Lexington	26	70	22	0	40.0	2.21	21	71	17	19	43.1	3.50
Lynchburg	15	55	21	17	40.4	.....	21	64	16	30	44.2	3.10
Snowville	26	66	22	— 1	33.9	6.56	19	66	17	10	37.5	3.25
Wytheville	2	54	21	5	34.7	3.00	20	60	17	10	37.3	4.30
Averages	.....	.....	.....	.....	37.3	3.36	.....	.....	.....	.....	40.9	3.59
WEST VIRGINIA.												
Weston	.....	.....	.....	.....	.....	.....	30	64	16	8	36.1	.....
Cabell C. H	12, 13	54	21	12	37.0	2.80	.....	.....	.....	.....	.....	.....
NORTH CAROLINA.												
Kenansville	27	76	21	22	47.1	.....	13, 30	70	10	28	50.7	.....
Goldsboro	14, 18	71	21	19	46.4	4.60	22	76	10	29	49.5	2.30
Warrenton	12	62	21, 22	12	39.8	4.15	30	63	10	26	42.6	3.45
Oxford	12	66	22	17	43.0	4.20	30	68	9	26	46.3	2.35
Chapel Hill	15	68	20	18	44.0	.....	21, 22	70	9	27	47.7	.....
Albemarle	26	73	21	9	40.9	3.66	21	73	10	16	44.1	7.05
Statesville	26	62	21	8	36.7	2.94	21	67	10, 17	18	41.6	8.00
Asheville (A.)	26	64	21	7	38.8	2.20	29	68	17	14	42.1	4.55
Do. (H.)	26	66	21	4	38.5	.....	20, 29	68	17	10	41.9	.....
Averages	.....	.....	.....	.....	41.7	3.63	.....	.....	.....	.....	45.2	4.62
SOUTH CAROLINA.												
Aiken	26	70	21	15	46.6	2.77	21, 29	73	17	26	52.5	6.05
Holland's Store	26	68	21	16	46.0	6.98	29	78	10	25	51.5	10.10
Gowdeysville	26	68	21	16	44.1	4.45	20, 22	69	9	23	48.7	7.58
Bluffton	27	76	21	32	53.8	2.20	21	74	10	38	57.7	5.30
Fort Mill	.....	.....	.....	.....	.....	.....	21	68	18	26	47.1	.....
Averages	.....	.....	.....	.....	47.6	4.10	.....	.....	.....	.....	51.5	7.26
GEORGIA.												
Berne	27	74	21	26	49.5	3.80	29	75	9, 10, 18	32	54.3	5.50
Penfield	26	68	21	14	44.7	3.50	29	76	9	25	49.5	7.70
Atlanta	26	65	21	10	40.4	6.50	.....	.....	.....	.....	.....	.....
Averages	.....	.....	.....	.....	44.9	4.60	.....	.....	.....	.....	51.9	6.60
ALABAMA.												
Rockville	14	69	21	15	46.3	4.88	20, 29	72	9	24	50.6	8.25
Carlowville	14	72	21	22	49.1	6.57	29	74	9	32	59.3	7.87
Selma	14	72	21	24	51.9	5.25	12	73	9, 16	31	55.1	6.15
Greene Springs	14	69	21	19	49.5	4.74	29	74	9	26	51.6	5.65
Coatopa	14	72	21	22	50.1	4.40	29	77	9	28	53.3	7.50
Fish River	14	70	21	30	.....	.....	22	76	9, 16	33	.....	6.35
Mobile	12, 13, 15	68	19, 20	25	50.9	3.30	.....	.....	.....	.....	.....	.....
Averages	.....	.....	.....	.....	49.6	4.86	.....	.....	.....	.....	54.0	6.96

Table showing the range of the thermometer, &c., for February and March—Continued.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
FLORIDA.		°		°	°	*In.*		°		°	°	*In.*
Port Orange	15	79	21	34	52.3	.....	12	82	9,17	43	61.6	.....
Jacksonville	27	80	21	28	55.5	2.25	29	84	9	38	61.2	5.40
Pilatka	27	78	21	30	56.3	5.29	6,29	84	19	36	61.8	6.36
Ocala	17	79	21,25	32	.....	.....	2,29	86	18	28	62.1	.....
Manatie	2,15	78	19,22	40	61.7	2.20	5,22	80	19	46	66.2	4.40
Averages	.....	.....	.....	.....	56.5	3.25	.....	.....	.....	.....	62.6	5.39
TEXAS.												
Gilmer	16	82	20	22	54.5	0.53	4	83	15	22	59.8	1.82
Houston	15,16	83	20	34	58.1	.....	5	89	16	29	63.1	.....
Palestine	16	82	20	20	55.0	0.52	4	83	15	21	57.5	0.50
Blue Branch	15,16,28	80	20	28	57.5	0.30	11	82	15	28	56.7	1.90
Lavacca	23	88	18	30	57.9	1.00	6	80	15	32	60.8	1.80
Clinton	16	83	18,20	30	57.7	0.90	11	83	16	29	63.8	3.60
Austin	22	85	20	27	55.4	0.58	11	83	15	29	59.5	2.29
Lockhart	25,28	79	20	25	54.7	.....	11,14,28	80	16	26	58.8	3.00
Averages	.....	.....	.....	.....	56.4	0.64	.....	.....	.....	.....	60.0	2.13
LOUISIANA.												
New Orleans	28	80	21	29	55.0	2.12	4	78	16	32	57.4	2.37
Shreveport	16,28	76	20	21	53.0	.....	4	80	15	26	55.7	.....
Averages	.....	.....	.....	.....	54.0	2.12	.....	.....	.....	.....	56.6	2.37
MISSISSIPPI.												
Columbus	14	69	21	20	47.1	3.88	29	71	9	30	51.1	5.54
Enterprise	1,14	71	21	24	50.0	.....	6	76	9,10	30	52.8	.....
Marion C. H.	12	76	21	18	48.8	3.70	29	76	9	28	56.1	5.30
Philadelphia	14	70	21	19	49.1	2.50	28	73	16	30	52.2	5.13
Brookhaven	15	73	21	24	51.4	1.68	6	74	9	27	53.2	7.90
Near Brookhaven	14,15	75	21	25	50.6	1.60	28	77	18	28	54.5	6.30
Natchez	16,28	73	21	22	47.7	1.67	4	74	9	29	56.8	5.39
Averages	.....	.....	.....	.....	49.2	2.51	.....	.....	.....	.....	53.8	5.93
ARKANSAS.												
Helena	15	69	20	14	46.4	.....	.....	.....	.....	.....	.....	.....
TENNESSEE.												
Elizabethton	14	71	21	6	44.5	3.22	20	68	17	12	41.8	3.40
Tusculum Coll'ge	14	66	21	6	40.3	1.90	21	64	18	24	41.9	2.80
Knoxville	11	67	21	5	39 7	3.60	21,29	69	17	11	44.2	6.00
Lookout Mount'n	12	68	21	5	41.0	.....	29	67	17	18	45.7	.....
Austin	11,26	66	21	8	41.4	5.15	.....	.....	.....	.....	.....	.....
Clarksville	14	66	20	7	40.3	3.03	29	71	17	15	43.8	3.47
Trenton	26	67	20	10	43.8	4.41	12	67	9,17	25	48.0	4.30
Memphis	14	69	20	12	43.1	4.69	28	71	15	26	47.1	5.65
Averages	.....	.....	.....	.....	41.8	3.71	.....	.....	.....	.....	44.6	4.27

Table showing the range of the thermometer, &c., for February and March—Continued.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
KENTUCKY.		°		°	°	*In.*		°		°	°	*In.*
Pine Grove	14	57	21	— 2	33.7	4.17	25	62	17	10	38.0	5.34
Danville	11, 12	64	21	1	38.7	3.68	25	68	17	21	44.7	3.63
Shelby City	11	63	21	— 2	36.5	3.88	25	68	17	12	40.9	3.82
Louisville	26	61	21	3	36.5	.....	.....	.....	.....	.....	.....	.....
Near Louisville	26	60	21	3	36.2	2.68	25	67	17	14	40.7	5.32
Averages	.....	.....	.....	.....	36.3	3.60	.....	.....	.....	.....	41.1	4.53
OHIO.												
New Lisbon	17	56	21	— 3	29.0	3.10	11, 26	50	16, 17	16	30.8	4.09
Salem	14	46	21	— 2	29.3	2.60	30	62	17	15	34.5	3.97
Steubenville	12	51	22	9	32.0	3.51	30	58	17	17	37.0	3.86
Painesville	11	44	21	3	26.4	2.78	30	51	16	13	31.1	2.94
Milnersville	16	53	19	— 4	30.0	.....	30	62	17	14	32.6	5.20
Cleveland	11	45	21	4	26.5	1.68	26	53	16	9	32.0	2.10
Wooster	.....	.....	.....	.....	.....	.....	30	62	16	4	35.7	.....
Gallipolis	14	62	21	3	34.1	3.15	20	64	17	14	39.4	4.65
Oberlin	11	48	21	— 2	29.5	.....	19, 26 / 30, 31	49	16	7	32.1	3.60
Kelley's Island	11	43	21	0	27.7	1.00	.....	.....	.....	.....	.....	.....
Sandusky	11	45	21	1	25.5	1.22	20	51	16	13	33.2	3.55
North Fairfield	11	46	21	— 4	27.7	1.82	25, 30	53	16	8	33.6	2.92
Gambier	11	47	21	— 4	28.2	3.00	30	58	16, 17	18	34.8	4.87
Westerville	11, 26	51	21	0	30.9	3.00	.....	.....	.....	.....	.....	.....
Williamsport	26	56	21	0	32.2	4.04	.....	.....	.....	.....	.....	.....
N. Bass Island	11	45	21	— 2	27.2	1.76	19	51	16	11	31.8	4.60
Marion	11, 26	46	21	— 3	27.0	2.06	31	57	15, 16	15	33.7	3.63
Hillsboro	26	54	21	— 2	31.5	3.13	20	58	17	12	35.8	3.78
Toledo	11	48	21	— 4	28.1	1.69	19	50	16	10	32.7	3.31
Bowling Green	11, 15	47	21	— 5	28.3	1.40	19, 25	51	16	5	34.0	4.00
Kenton	12	48	21	— 2	31.5	1.98	22, 30	48	17	25	35.4	7.70
Urbana	26	55	21	— 7	29.1	2.07	25	58	15, 16	12	35.3	4.26
Bethel	26	55	21	— 3	32.8	3.75	25	59	17	11	36.7	4.80
Jacksonburg	11, 26	56	21	— 4	31.6	2.75	25	58	15, 17	14	36.2	4.21
Mt. Auburn Inst.	14	59	21	— 4	32.6	2.06	12, 20 / 25	58	17	14	38.0	4.73
Cincinnati (H)	14	59	21	0	33.0	1.55	25	69	17	16	39.0	3.26
Do (P)	11	58	20	.7	33.1	2.98	31	64	17	15	40.7	4.80
College Hill	14	54	21	— 4	31.4	1.74	12	57	17	12	35.1	4.50
Averages	.....	.....	.....	.....	29.9	2.39	.....	.....	.....	.....	34.8	4.14
MICHIGAN.												
Detroit	11	41	21	— 9	23.6	2.08	19	47	5	0	29.9	3.40
Monroe City	11	48	21	— 7	27.8	0.70	10	50	16	8	32.8	2.00
Adrian	11	45	21	—12	22.1	2.48	19	50	16	— 4	28.1	3.63
Alpena	7, 9	34	22	— 3	20.8	3.00	.....	.....	.....	.....	.....	.....
State Ag'l College	7	44	21	—13	24.3	1.20	17, 18	50	18	10	30.3	3.01
Litchfield	11	47	21	—18	23.3	2.10	20	52	16	2	29.2	3.60
Coldwater	11	49	21	—11	25.1	1.00	20	50	15, 16	6	30.1	4.13
Grand Rapids	11	48	21	—10	25.5	.....	19	49	16	1	30.7	2.71
Northport	11	40	22	—12	20.4	1.30	24	49	3	— 4	27.2	2.53

Table showing the range of the thermometer, &c., for February and March—Continued.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
MICHIGAN—Con'd.		°		°	°	*In.*		°		°	°	*In.*
Benzonia	7	41	22	—12	21.8	.....	31	49	3	0	29.0	.....
Homestead	16	42	22	—16	24.5	.....	.....	.....	.....	.....	.....	.....
Pleasanton	11	45	22	—12	19.9	2.85	28	54	3	— 2	28.5	3.25
Muskegon	16	48	21	— 2	26.7	0.95	30, 31	58	16	4	34.5	3.90
Otsego	16, 18	54	21	0	32.0	.....	28	58	8	18	38.3	.....
Copper Falls	11	38	20	—18	12.1	5.75	24	43	11	— 4	22.9	1.30
Ontonagon	11	40	20, 21	—24	15.1	.....	24	46	12	—14	23.4	.....
Averages	.....	.....	.....	.....	22.8	2.13	.....	.....	.....	.....	29.6	3.04
INDIANA.												
Aurora	11	58	21	2	33.0	2.59	25	62	17	12	38.6	3.52
Vevay	11, 26	58	21	2	34.4	2.47	25	62	16, 17	16	39.1	3.93
Mount Carmel	11, 14	52	21	0	30.5	2.00	12, 25	56	16	12	36.1	3.05
Muncie	26	58	21	— 6	28.7	1.50	24	63	15	14	36.0	2.85
Spiceland	11	55	21	— 7	29.7	1.31	25	59	16	10	35.3	3.00
Laconia	11, 26	62	21	— 3	34.5	2.43	25, 30	66	17	11	40.1	3.81
Columbia City	10	54	21	— 5	29.8	0.70	.....	.....	.....	.....	.....	.....
Knightstown	11	56	21	—10	29.1	1.28	25	60	16	12	37.0	2.37
Indianapolis	11	58	21	— 8	32.6	1.08	25	65	16	12	36.6	2.77
La Porte	16, 25	47	20	— 2	23.2	1.35	29	62	15, 16	4	33.2	2.90
Rensselaer	26	52	21	— 9	26.6	1.60	.....	.....	.....	.....	.....	.....
Merom	11, 14	62	21	— 3	32.6	1.90	25	62	17	10	38.1	2.63
New Harmony	11, 26	56	21	3	35.4	2.55	12	63	17	14	41.3	2.31
Harveysburg	11	56	21	—12	28.4	0.80	25	58	16, 17	10	33.7	3.30
Averages	.....	.....	.....	.....	30.6	1.68	.....	.....	.....	.....	37.1	3.04
ILLINOIS.												
Chicago	11	50	20	— 8	30.0	0.86	24	53	15	10	35.1	1.81
Near Chicago	11	47	20, 21	— 4	23.6	.....	25	42	16	5	30.4	.....
Evanston	11	46	20	— 7	26.9	1.25	25	45	16	8	31.9	3.24
Marengo	11	45	20	—13	23.3	0.59	25	52	16	— 2	29.3	4.43
Mattoon	14	51	20	— 6	28.8	0.93	25	55	16, 17	12	34.7	3.00
Aurora	26	48	21	—11	24.3	2.45	25	53	16	3	30.3	1.92
Louisville	11, 14	64	20, 21	—20	31.7	1.30	30	66	17	12	40.0	3.70
Golconda	17	69	21	— 2	39.5	7.50	31	79	17	10	39.3	4.60
Belvidere	11	45	20	—12	23.0	0.78	25	53	16	— 2	29.5	3.69
Sandwich	26	50	21	—12	25.9	1.10	.....	.....	.....	.....	.....	.....
Ottawa	26	57	20	— 3	29.6	0.70	25	62	15	2	35.1	3.28
Decatur	26	59	20	— 6	28.5	0.95	25	62	16	9	34.7	2.97
Pana	26	51	20	— 4	30.3	0.30	25	63	15	10	36,3	2.70
Winnebago	11	47	20	—11	22.3	0.75	25	49	16	— 3	27.6	3.41
Rochelle	11, 16, 26	47	20	— 9	25.1	.....	25, 26	48	16	2	31.0	.....
Wyanet	26	56	20	— 8	26.3	0.70	25	57	15, 16	5	31.1	6.25
Tiskilwa	26	54	20	— 6	27.5	.....	25	54	15	8	33.2	.....
Hennepin (S.)	26	58	20	— 5	24.0	.....	25	60	15	6	32.0	.....
Do (O.)	26	56	20	— 7	28.4	.....	25	58	15	8	32.3	.....
Peoria	26	63	20	— 7	30.2	0.33	25	60	15	11	35.5	4.37

Table showing the range of the thermometer, &c., for February and March—Continued.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
ILLINOIS—Cont'd.		°		°	°	*In.*		°		°	°	*In.*
Springfield	26	56	20	— 4	29. 1	.....	10	63	15	6	36. 2	.....
Dubois	14	68	20	0	34. 2	1. 46	25	65	17	13	39. 9	2. 15
South Pass	14	68	20	0	36. 1	.....	.....	.....	.....	.....	.....	.....
Galesburg	26	63	20	— 8	28. 0	0. 30	28	62	15	2	33. 2	2. 80
Manchester	26	67	20	— 9	31. 5	0. 35	25	63	15	5	37. 2	4. 61
Mount Sterling	26	69	20	—10	29. 7	0. 50	10	62	15	5	37. 9	7. 20
Andalusia	26	64	20	— 4	28. 0	.....	24, 25	58	15	8	33. 5	.....
Augusta	26	67	20	— 9	30. 8	0. 12	11	64	15	0	35. 3	5. 82
Warsaw	26	72	20	— 9	32. 3	0. 05	10	66	15	2	35. 5	4. 45
Averages	.....	.....	.....	.....	28. 6	1. 11	.....	.....	.....	.....	30. 3	3. 82
WISCONSIN.												
Sturgeon Bay	11	40	21	—15	18. 2	2. 18	25, 28	44	8	— 6	26. 5	2. 60
Manitowoc	11	46	20	—16	23. 1	1. 65	24	45	16	4	29. 3	3. 58
Plymouth	11	43	20	—17	21. 0	1. 40	6	34	3	6	.....	.....
Hingham	11	45	20	—14	23. 2	.....	30	49	16	— 1	23. 6	.....
Milwaukee	11	45	20	—11	24. 0	1. 32	19	47	16	— 2	29. 9	5. 01
Appleton	11	47	20	—14	20. 7	0. 64	28	50	16	4	31. 7	.....
Geneva	11	45	20	—10	23. 7	0. 40	25	50	16	— 3	29. 3	3. 35
Waupacca	11	48	25	—18	21. 8	.....	18, 29	52	12	7	30. 7	.....
Embarrass	11	44	21	—22	17. 1	1. 35	18	47	16	5	27. 8	.....
Rocky Run	7	48	20, 21	—14	22. 2	1. 99	19 28	44	16	— 4	29. 0	6. 38
Madison	11	44	20	—15	20. 9	1. 35	25	42	16	— 8	27. 0	3. 85
Edgerton	11	48	20	—10	25. 5	2. 78	25	48	16	— 4	31. 1	2. 22
Mosinee	11	43	20	—29	16. 1	0. 82	18, 28	46	8	— 2	25. 7	3. 76
Baraboo	26	52	20	—16	22. 5	3. 25	26, 28, 31	50	16	—10	29. 4	11. 00
New Lisbon	10	54	20	—24	22. 5	.....	24, 25	53	16	—10	30. 2	.....
Bayfield	11	42	21	—28	13. 3	.....	24	50	12	—12	24. 1	.....
Averages	.....	.....	.....	.....	21. 0	1. 59	.....	.....	.....	.....	28. 3	4. 64
MINNESOTA.												
Beaver Bay	12	43	21	—26	15. 5	2. 74	.....	.....	.....	.....	.....	.....
Afton	26	44	20	—26	15. 1	0. 85	27	47	8	—15	26. 6	3. 35
St. Paul	10, 26	39	20	—23	17. 8	0. 60	28, 29, 31	46	8	—10	27. 5	2. 10
Minneapolis	9, 10	36	20	—29	14. 9	0. 56	28, 30	46	8	—16	25. 2	2, 86
Sibley	10	39	20	—32	14. 6	.....	28	49	8	—23	20. 2	2. 22
Koniska	10	40	20	—30	14. 8	0. 40	30, 31	50	8	—26	23. 9	1. 65
New Ulm	11, 16	38	19	—22	15. 3	0. 17	27, 30	45	8	—20	22. 4	1. 78
Madelia	10	43	20	—34	14. 0	0. 10	30	48	8	—20	20. 8	3. 27
White Earth	25	42	19	—32	10. 9	1. 85	28, 30, 31	48	7	—16	18. 2	3. 38
Averages	.....	.....	.....	.....	14. 8	0. 91	.....	.....	.....	.....	23. 1	2. 58
IOWA.												
Clinton	15, 26	50	20	—12	23. 5	0. 50	25	50	15	5	30. 4	4. 25
Waukon	11, 26	40	20	—16	20. 1	0. 50	28	45	16	— 3	26. 1	.....
Dubuque	26	51	20	— 7	25. 3	1. 36	28	52	16	4	30. 8	3. 95
Monticello	7	61	20	—10	25. 2	0. 31	28	54	16	3	29. 3	3. 00
Bowen's Prairie	25, 26	56	20	12	24. 9	1. 50	28	56	15, 16, 17	— 4	29. 1	4. 35

Table showing the range of the thermometer, &c., for February and March—Continued.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
Iowa—Cont'd.		°		°	°	*In.*		°		°	°	*In.*
Fort Madison	26	65	20	— 9	29.7	0.15	25	59	15	2	33.3	4.47
Guttenberg	11	46	20	—12	21.2	0.33	28	52	16	0	27.2	.....
Mount Vernon	26	48	20	— 9	24.0	.....	28	50	15, 16	6	29.7	.....
Iowa City	26	57	20	—10	24.9	0.25	25	56	15	4	30.8	3.42
Independence	26	49	20	—14	21.9	0.50	28	52	8, 16	— 1	27.3	3.13
Near Independ'ce	26	46	20	—18	21.7	0.30	25	48	16	— 2	26.7	2.20
Waterloo	26	50	20	—16	22.7	.....	28	50	16	2	27.9	.....
Rockford	26	47	20	—16	21.9	.....	19, 31	44	8	— 5	27.2	.....
Iowa Falls	25, 26	48	20	—17	.....	0.00	24	48	8	— 6	27.0	5.55
Ames	.....	.....	.....	.....	.....	.....	24, 28	50	8	—12	23.6	3.70
Algona	16	45	20	—18	20.0	0.00	23	60	8	— 9	23.2	.....
West Bend	10	42	20	—25	17.1	0.00	25	45	8	—19	21.2	3.70
Webster City	16	50	20	—17	24.6	.....	18	46	8	—10	26.2	.....
Boonesboro	25	50	20	—18	24.6	0.00	24	48	8	—12	24.9	3.91
Mineral Ridge	10, 25	51	20	—13	26.4	.....	18	50	8	— 8	28.0	.....
Fontanelle	25	57	20	—14	28.0	0.00	10	53	8	— 5	29.2	3.20
Grant City	.....	.....	.....	.....	.....	.....	27	50	8	— 7	26.0	4.30
Logan	25	60	20	—15	29.6	0.00	26	60	15	— 7	25.7	.....
Woodbine	25	59	19	—14	28.0	0.01	25	60	8	— 7	26.7	1.30
West Union	24	52	20	—17	23.4	0.78	28	62	16	— 1	28.6	3.73
Averages	.....	.....	.....	.....	24.0	0.36	.....	.....	.....	.....	27.4	3.64
Missouri.												
St. Louis	26	64	20	2	36.7	0.33	10	63	15	15	40.0	2.76
Allenton	25	69	20	— 1	35.5	0.59	10	70	15	7	40.2	4.95
Hematite	14	75	20	1	38.2	0.20	10	67	15	9	42.1	4.05
Rolla	14, 25	69	20	2	36.1	1.06	10	65	15	10	40.7	4.64
Jefferson City	10	64	20	0	34.0	.....	11	68	15	6	35.0	.....
Kansas City	10	71	20	— 1	38.2	0.00	11	72	15	4	41.0	0.63
Harrisonville	25	68	20	4	36.9	0.00	11, 25, 27	66	15	2	38.4	0.97
St. Joseph	10	65	20	3	39.5	.....	11	66	15	3	37.5	1.45
Oregon	10	69	20	— 9	34.2	0.03	10	65	15	— 5	34.2	2.30
Averages	.....	.....	.....	.....	36.6	0.32	.....	.....	.....	.....	38.8	2.72
Kansas.												
Atchison	10	68	20	— 6	33.9	0.00	11	67	15	— 1	36.0	2.15
Leavenworth	10	69	20	— 6	32.8	0.00	.....	.....	.....	.....	.....	.....
Olathe	9	70	19	— 5	34.5	0.00	.....	.....	.....	.....	.....	.....
Paola	10	68	20	— 2	36.2	0.00	11	73	15	2	38.2	0.80
Baxter Springs	10	74	20	— 2	41.2	0.60	28	79	15	7	43.7	2.60
Lawrence	10	68	20	— 2	35.4	0.03	11, 27	67	15	3	37.7	1.86
Holton	10	66	20	— 5	34.4	.....	19	68	15	— 2	32.1	.....
Neosho Falls	9	69	20	— 2	35.2	0.00	11	74	15	2	31.4	1.00
Le Roy	24	69	19	0	40.3	.....	28	76	15	3	39.6	1.87
State Ag'l College	13	69	20	— 3	34.1	0.00	21, 27	68	15	.....	36.2	1.45
Council Grove	10	73	20	0	38.3	0.00	28	72	15	— 6	40.3	1.65
Crawfordsville	10	75	20	— 2	40.8	0.02	11, 25	74	15	5	44.2	1.50
Averages	.....	.....	.....	.....	36.4	0.07	.....	.....	.....	.....	37.9	1.65

Table showing the range of the thermometer, &c., for February and March—Continued.

States and stations.	February, 1870.						March, 1870.					
	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
NEBRASKA.		°		°	°	*In.*		°		°	°	*In.*
Omaha Agency	25	67	19	—14	32.6	0.00	27	62	15	— 3	27.8	1.95
Blair	25	60	19, 20	—10	23.4	.....	.....	.....	.....	.....	.....	.....
De Soto	25	57	20	—15	28.7	0.03	25, 27	55	15	— 6	27.7	1.36
Bellevue	25	62	20	— 5	32.5	0.00	10	64	15	0	32.5	1.00
Nebraska City	25	64	20	— 5	31.3	0.00	10	66	15	0	32.4	2.15
Averages	.....	.....	.....	.....	30.9	0.01	.....	.....	.....	.....	30.1	1.62
UTAH TERRITORY.												
G't Salt Lake City	24	58	18	20	39.1	.....	.....	.....	.....	.....	.....	.....
Coalville	9	52	17	—13	28.2	.....	26	60	15	—18	32.8	1.60
CALIFORNIA.												
Monterey	1	70	17	34	52.7	3.80	29	67		35	50.3	1.91
Chico	4	70	17	32	51.3	3.70	31	72	5, 6, 14	32	51.8	3.44
Watsonville	9	79	16	33	54.2	3.59	28	76	5	35	52.2	2.01
Vacaville	3	69	25	34	51.7	3.24	25,26,28	66	14	34	51.3	1.62
Cahto	3	66	17	32	49.1	9.40	28, 29	66	14	34	48.0	10.00
Visalia	8	78	5	29	51.8	2.76	29	79	5	30	51.2	0.55
Averages	.....	.....	.....	.....	51.8	4.42	.....	.....	.....	.....	50.8	3.26
MONTANA TERR'Y.												
Deer Lodge City	21	55	17	—15	29.4	1.05	30	62	14	—28	26.5	1.11
Missoula Mills	.....	.....	.....	.....	.....	.....	31	70	15	— 6	39.5	.....
WASHINGTON TER.												
Walla-Walla	22, 23	50	11, 15	38	45.7	8.70	.....	.....	.....	.....	.....	.....
COLORADO TERR'Y.												
Denver	24	64	5	1	33.5	1.70	27	67	14	— 8	32.7	0.70
OREGON.												
Portland	22	58	16,27,28	32	42.5	4.30	.....	.....	.....	.....	.....	.....
Eola	22	54	16	27	39.2	5.63	.....	.....	.....	.....	.....	.....

STATE AVERAGES FOR FEBRUARY AND MARCH, 1870.

Table showing the highest and lowest temperature (with dates prefixed) in the States named, with the average mean temperature and rain-fall (including melted snow) of the same States, for the months of February and March, 1870.

State.	FEBRUARY, 1870.						MARCH, 1870.					
	Date.	Highest temperature.	Date.	Lowest temperature.	Average mean temperature.	Aver'ge moisture.	Date.	Highest temperature.	Date.	Lowest temperature.	Average mean temperature.	Aver'ge moisture.
		°		°	°	*In.*		°		°	°	*In.*
Maine	20	56	4	—40	19.9	5.84	20, 31	56	12	—18	28.4	3.98
New Hampshire	15	52	5	—20	16.9	4.95	20	60	12	—18	26.9	3.31
Vermont	15	49	4	—29	17.4	4.75	30	53	12	—18	25.2	2.04
Massachusetts	18	55	25	— 8	24.7	5.05	22	61	15	2	29.9	4.39
Connecticut	18	58	22	— 3	26.9	6.32	21	56	11	9	31.7	5.55
New York	18	60	4	—20	24.4	4.19	30	63	11, 19	— 9	29.1	4.14
New Jersey	18	60	22	0	32.3	3.43	20	63	17	16	35.9	3.91
Pennsylvania	13, 17, 18	60	21, 23	—10	29.7	3.87	30	67	17	— 8	33.6	3.84
Maryland	18	60	21	5	34.6	3.49	21	65	16	16	40.4	2.88
Virginia	18	73	22	— 1	37.3	3.36	21	71	17	10	40.9	3.59
North Carolina	27	76	21	4	41.7	3.63	22	76	17	10	45.2	4.62
South Carolina	27	76	21	15	47.6	4.10	29	78	9	23	51.5	7.26
Georgia	27	74	21	10	44.9	4.60	29	76	9	25	51.9	6.60
Alabama	14	72	21	15	49.6	4.86	29	77	9	24	54.0	6.96
Florida	27	80	21	28	56.5	3.25	2, 29	86	18	28	62.6	5.39
Texas	23	88	20	20	56.4	0.64	5	89	15	21	60.0	2.1
Mississippi	12	76	21	18	49.2	2.51	28	77	9	27	53.8	5.93
Tennessee	14	71	21	5	41.8	3.71	28, 29	71	17	11	44.6	4.27
Kentucky	11, 12	64	21	— 2	36.3	3.60	25	68	17	10	41.1	4.53
Ohio	14	62	21	— 7	29.9	2.39	25	69	16	4	34.8	4.14
Michigan	16, 18	54	20, 21	—24	22.8	2.13	28, 30, 31	58	12	—14	29.6	3.04
Indiana	11, 14, 26	62	21	—12	30.6	1.68	25, 30	66	15, 16	4	37.1	3.04
Illinois	26	72	20	—13	28.6	1.11	31	79	16	— 3	30.3	3.82
Wisconsin	10	54	20	—29	21.0	1.59	24, 25	53	12	—12	28.3	4.64
Minnesota	26	44	20	—34	14.8	0.91	30, 31	50	8	—26	23.1	2.58
Iowa	26	65	20	—25	24.0	0.36	28	62	8	—19	27.4	3.64
Missouri	14	75	20	— 9	36.6	0.32	11	72	15	— 5	38.8	2.72
Kansas	10	75	20	— 6	36.4	0.07	28	79	15	— 6	37.9	1.65
Nebraska	25	67	20	—15	30.9	0.01	10	66	15	— 6	30.1	1.62
California	9	79	5	29	51.8	4.42	29	79	5	30	50.8	3.26
Dist. of Columbia	18	52	21	13	38.9	3.03	21	57	9, 17	26	40.3	3.70

NOTES OF THE WEATHER FOR FEBRUARY, 1870.

Steuben, Me.—Aurora 1st; greatest freshet in many years 20th.

Orono, Me.—Auroras, 1st brilliant, 10th, 11th.

W. Waterville, Me.—Auroras 1st, 21st, 26th; snow, rain, 18th, 19th, and damaging flood 20th. Stormy month; 1.94° colder than the February average of 6 years.

Gardiner, Me.—Auroras, 1st and 23d, brilliant 25th. Average heat of February for 34 years, 29.59°; and average moisture 3.35 inches.

Lisbon, Me.—Storm 18th, 19th; aurora 23d; excellent sleighing since 21st.

Norway, Me.—Brilliant aurora 1st; storm 18th, 19th; freshet 20th. Stormy month; 4.48° colder than last year.

Cornish, Me.—Aurora 1st; hail, sleet, rain, 18th; mist, snow, 19th.

Cornishville, Me.—Month's average heat for 40 years, 18.33°.

Stratford, N. H.—Snow fall this February 42.5 inches.

Whitefield, N. H.—Aurora 1st. Snow or rain on 20 days; 2 to 3 feet snow on the ground.

Antrim, N. H.—Coldest month this winter. Snow on 9 days; and on 35 days since October 1st.

Tamworth, N. H.—Auroras 1st, 23d, 27th; no frost in ground 1st; ground frozen 4 inches 7th. The cold penetrated 20 inches of snow and 4 of earth on 4th and 5th. Blustery, drifting 21st, 22d. Snow 29 inches in fields, 35 in woods. Month steadily cold.

Goffstown Center, N. H.—Auroras 1st, 4th. Month rather pleasant.

Lunenburg, Vt.—Snow and ashes, (or fine sand,) mixed, three inches, 12th. Stormy month; 4 feet snow on ground.

N. Craftsbury, Vt.—Brilliant auroras 1st, 5th; great rain and floods 19th. Coldest February in 3 years, and very changeful.

Newport, Vt.—Aurora 1st; rain 18th; then snow 19th.

E. Bethel, Vt.—Snow night of the 17th; rain 18th and on 19th with high wind; freshets 19th, 20th. Mean heat of winter 22.5°.

Woodstock, Vt.—Lightning 19th; Ottaqueeche River open (4th time) 19th; good sleighing all month; snow 2 feet deep.

W. Charlotte, Vt.—Auroral arch all night 1st; drifting snow, 12 to 18 inches, 9th; ice on lake 2 to 3 inches 14th; heavy rain 18th, 19th.

Panton, Vt.—Bright aurora 1st; Arnold's Bay closed 4th; drifting snow-storm 8th; heavy rains 18th.

N. Billerica, Mass.—Aurora 1st; 12 inches snow 4th; drifting snow storm 8th; heavy storm 18th, 19th. A hard, raw month.

New Bedford, Mass.—Little snow or ice; river not frozen 24 hours.

Worcester, Mass.—Aurora 1st, 2d; furious snow storm 8th; storm 28th.

Mendon, Mass.—Bright aurora 1st; damaging freshet 18th.

Lunenburg, Mass.—Ground has 18 inches snow 1st; good sleighing all month; 9 inches snow on ground 28th. Average of February for 30 years 26.38°; this month 27.60°.

Amherst, Mass.—A few days good sleighing before 14th; warm rain, snow gone 18th; good sleighing at close.

Richmond, Mass.—Heavy rain, loud thunder, lightning, 18th.

Newport, R. I.—Rain, snow, hail, 21st, and mercury fell 20° from 7 a. m. to 9 p. m. Winter mean temperatures, 1865, 29.78°; 1866, 31.08°; 1867, 29.7°; 1868, 26.78°; 1869, 29.95°; 1870, 33.92°.

Middletown, Ct.—Auroras 1st, brilliant 13th; lightning 18th.

Colebrook, Ct.—Heavy rain p. m. of 18th to p. m. of 19th.

Brookfield, Ct.—Rain in torrents, heavy thunder, sharp lightning, 18th.

Moriches, N. Y.—Aurora 1st. A remarkable February and winter; no ice for storing till 23d, then only 3 inches thick.

S. Hartford, N. Y.—Heavy rain and thunder and lightning 18th, with freshets; aurora 23d.

Garrisons, N. Y.—Aurora 1st; heavy northeast snow-storm 8th; severe southeast storm of rain, lightning and thunder, melting snow and causing floods 18th; river open all month; 8 inches frost in ground.

New York City.—(Professor Morris.)—Aurora 1st; snow and gale 8th; lightning 18th; light snow 19th; snow and rain p. m. 27th, then two inches snow till 6 p. m. 28th. (Professor Joy.)—Snow 1st; pleasant till 7th; eight inches of snow 8th; almost a hurricane from northwest 9th; heavy rains 14th, 15th, 17th, 18th, 20th; cold and clear to 27th.

Glasco, N. Y.—Splendid aurora 1st; Hudson River closed 8th; opened 12th; closed 24th; heavy thunder showers 18th.

Minaville, N. Y.—Sheet lightning 18th; good sleighing all month; 34.75 inches drifted snow. Winter mild.

Cooperstown, N. Y.—Ice on Otsego Lake, four inches 1st; twelve inches 28th; best sleighing this winter 28th; month 4° below last February.

North Hammond, N. Y.—Aurora 1st; snow all day 2d, 22d, 23d; heavy rain and snow 18th. Sudden and great changes.

Leyden, N. Y.—Mean temperature—for February, 1869, 25.16°; 1870, 16.40°—rainfall for February, 1869, 0.25 inches; 1870, 1.05 inches—snow for February, 1869, forty-one inches; 1870, thirty inches.

Utica, N. Y.—Magnificent aurora, with green and dark orange beams, 1st; twelve inches snow 8th; snow, rain, 18th; Mohawk overflows 19th; severe snow storm all night 20th, and day 21st; snow all day and night 26th.

South Trenton, N. Y.—Pleasant January and up to 20th, when three days' drifting snow blocked roads. Three inches snow on ground 28th.

Cazenovia, N. Y.—Aurora 1st; snow in month 52.25 inches.

Depauville, N. Y.—Auroras 1st, 26th; good sleighing last week 28th.

North Volney, N. Y.—Aurora 1st; snow all day 2d, 3d; severe, blustering snow storm 20th, 21st, 22d. Month 3.15° colder than in 1869.

Waterbury, N. Y.—Aurora 1st; two spots on sun visible to naked eye, one one-eighth of sun's diameter; four large and several smaller nuclei, visible by telescope, 13th.

Nichols, N. Y.—Rain and three inches snow 18th; blustering snow storm 20th; squalls 21st, 24th; snow, hail, rain, 27th.

Little Genesee, N. Y.—No bad storms this month; some potatoes and turnips yet undug.

Suspension Bridge, N. Y.—Sleighing all month except 17th and 28th.

Buffalo, N. Y.—Mean temperature 2.25° below the average of twelve Februarys; sleighing twenty-four days; coldest seven consecutive mornings this winter, 19th to 25th, both inclusive.

Newark, N. J.—Coldest winter month, and 21st, 22d, 23d the coldest consecutive mornings, making some storing ice; the temperature exceeded in half of twenty-six Februarys; average of the 26, 30.61; coldest, 1868, 21.86°; warmest, 1857, 35.97°.

New Brunswick, N. J.—Blue bird 14th; copious rains, heavy thunder, lightning, 18th; crows 20th. The cold snap froze lilac sprouts.

Moorestown, N. J.—Snow, rain, snow, high wind, 8th; heavy rains, thunder, lightning, 17th, 18th. Winter, mean temperature 34.93°; rain 10.63 inches; snow 15.5 inches. Ground fit for plow much of the time.

New Germantown, N. J.—Aurora 1st; ice four inches thick 25th.

Newfield, N. J.—Diffuse aurora 1st; blue bird 15th; prospecting robins 26th; black birds migrating north 28th.

Greenwich, N. J.—Aurora 1st; high winds 2d to 6th; larks, crocuses, 17th; thunder gust 18th; ice two inches thick 22d.

Vineland, N. J.—Severe snow storm 8th; rain storm all day 18th; cold, windy, 19th. No injury yet to fruit.

Nyces, Pa.—Rolling thunder, rain, sleet 18th.

Hamlinton, Pa.—Dim aurora 1st. Month warm like March; little sleighing, much thawing and freezing.

Dyberry, Pa.—Aurora 1st; fifteen inches snow 8th; storm of fine hail 18th; four inches snow and hail 27th.

Fallsington, Pa.—Aurora 1st; snow, frozen rain, 8th; thunder shower 18th. Mild month, bad roads.

Germantown, Pa.—Faint white aurora 1st; pyrus japonica and althea in leaf 25th.

Horsham, Pa.—Heavy fall of snow 8th. The last week cold; considerable ice gathered.

Plymouth Meeting, Pa.—Aurora 1st; thunder shower, vivid lightning, 18th; thermometer fell 27° in six hours. Sleighing 8th to 12th. Winter snow-fall 21.86 inches.

White Hall, Pa.—Aurora 1st; eight inches drifted snow 8th; seven inches snow 27th. Month's snow-fall eighteen inches.

Factoryville, Pa.—Aurora 1st; severe snow storm 8th. Mean temperature of this winter 30.01°.

Reading, Pa.—Aurora 1st; snow 8th; rain, high wind, 18th; ice on canal 3.5 inches thick 25th; hail, snow, rain, 27th.

West Chester, Pa.—Bright aurora 1st; heavy thunder storm 18th.

Parkersville, Pa.—Slight aurora 1st; eight inches snow 8th; showers all day 18th; air smoky 4th, 7th 12th, 27th.

Ephrata, Pa.—Aurora 1st; snow 8th; heavy rain last night and today, hail and snow to-night, 18th; high wind all 19th.

Ashland, Pa.—Aurora 1st; snow 8th; wind changed from south to northeast at 4 p. m. 18th, mercury fell fast from 50° to 32°, hail at night.

Harrisburg, Pa.—Heavy snow storm 8th; drifting snow 20th; ice four inches thick 21st; sleet, rain, hail, snow, 27th.

Carlise, Pa.—Bright day, dry roads, plowing 7th; eighteen inches snow 8th, 9th, and six days' sleighing; four inches ice 28th.

Fountain Dale, Pa.—Jays 11th; robins 15th; ice four to six inches thick 23d. Month 4° colder than in 1869.

Tioga, Pa.—Rain, snow, river open 18th; closed 22d.

Williamsport, Pa.—Slight aurora 1st; blue jay 5th; 27 inches snow 8th; sparrows, crows, 10th.

Lewisburg, Pa.—Aurora 1st; 29 inches snow in 30 hours 8th, 9th.

Grampian Hills, Pa.—Fair 1st to 7th; moderate to 18th; cold to 25th; month ends moderate, with good wheeling. Snow, month, 15 inches; winter, 62 inches.

Johnstown, Pa.—Snows, sprinkling all day 1st, falling all night 7th, all day 8th, in squalls 9th, 10th.

Franklin, Pa.—Moderate snow 8th, rain 17th, snow 18th. Winter temperature, 29.17°; last year, 28.09°.

Pittsburg, Pa.—Moderate 1st to 9th; gentle rain 17th, then deepest snow of season 18th, with high wind. Ice in river 5 inches thick last week of month.

Connellsville, Pa.—Crows going south 15th, wild geese north 16th; robins 18th.

New Castle, Pa.—Mild to 17th; cold, sharp northwest winds to 26th.

Beaver, Pa.—Month mild, streams not frozen over.

Milford, Del.—Ice 18th, 20th, 21st; faint aurora 24th.

Woodlawn, Md.—Aurora 1st; robins 14th; thunder and lightning 18th. Snow in sight all month; month 4° colder than in 1869.

Frederick, Md.—Nine inches snow 8th; hail, sleet, snow, rain 18th.

Emmittsburg, Md.—Snow, 9 to 12 inches, 8th; high wind all day, sleet and snow at 4 p. m., 18th; aurora 28th.

Johnsontown, Va.—Rain, high wind 1st; frogs, violets 17th; snow 23d; heavy thunder-storms, hail 27th.

Hampton, Va.—Violent gale, aurora 1st; hyacinths 10th; early vegetation frozen 21st, 22d; thunder-storm 27th.

Zuni Station, Va.—Faint aurora 1st; thunder-storms 15th, 27th; wheat looking badly; peaches and pears frozen.

Bacon's Castle, Va.—Aurora 1st; rain, snow 7th, 8th, 18th; ground frozen 9th; thunder showers 15th, 27th; plowing again 25th.

Comorn, Va.—Aurora 1st; elm and filbert blossoms 5th; periwinkle 17th; plowing nearly all month.

Vienna, Va.—Aurora 2d; snow, 3.1 inches 8th, 2 inches 28th.

Piedmont, Va.—Bluebirds 3d; wild geese 8th; fog, rain, northwest wind-storm, hail, snow 18th, mercury fell 22° in 5 hours; ground froze 24th; robins 27th.

Lynchburg, Va.—Snow 7th, 8th; robins 13th; rainy 18th; 2.25 inches ice 22d; frogs 26th.

Wytheville, Va.—Wheat fine; some maple sugar made.

Oxford, N. C.—Sleet 5th; rain, snow 6th; peach blossoms 17th; cedar birds, robins 25th; thunder-shower 27th.

Chapel Hill, N. C.—Two terrific thunder and hail storms 27th.

Statesville, N. C.—Rain and sleet 4th, with snow 6th; snow, freeze 20th; thunder-shower and hail 27th.

Aiken, S. C.—Honey peach and wild plum blossoms 12th.

Gowdeysville, S. C.—Ice 1st, 2d; rain, snow, 7th, 20th; thunder-showers, with light hail, 15th; bluelets (or innocents) 16th; peach and plum blossoms 27th.

Holland's Store, S. C.—Doves mating 6th; snow, rain, snow 7th; peach blossoms 19th; furious snow-storm, greatest fall in many years, 22d.

Bluffton, S. C.—Black frost, orange and other fruits hurt, 19th, 21st.

Berne, Ga.—Peas, squashes, &c., nipped 21st.

Penfield, Ga.—Peach blossoms 12th, (very early;) 1.5 inch ice 21st.

Atlanta, Ga.—Thunder-storm (1.7 inches rain in 20 minutes) 15th; some peaches and plums frozen 21st.

Rockville, Ala.—Plum blossoms 3d; peach blossom 16th, many killed 21st.

Green Springs, Ala.—Thunder and lightning 15th, 22d, 26th; sleet 18th.

Coatopa, Ala.—Peach and plum blossoms 12th; thunder-showers 15th, 22d, 26th; rain, hail, snow 17th.

Port Orange, Fla.—Ice on mainland 8th, 20th, 21st; here 20th injured orange trees; green corn 18 miles from here 21st.

Jacksonville, Fla.—Thunder-shower 23d. Fruit not injured by frost. Month 2.20° colder than usual.

Pilatka, Fla.—Thunder showers 15th, 17th; very cold 19th to 22d, ice, frozen ground, but no damage done.

Bremond, Texas.—Frost 14th; ice 20th; peach blossoms 28th.

Gilmer, Texas.—Snows 2d, 3d, 5th; bluetts 7th; buckeye leaves 8th; plum blossoms 14th, and peach 17th; ice 21st.

Houston, Texas.—Ice 18th, 20th; auroras 21st, 25th, 26th, 27th, 28th

Blue Branch, Texas.—Peach and plum blossom 17th; norther, ice 18th; frost 27th. Month dry, windy; corn planting begun.

Austin, Texas.—Frost 9th; wild plum blossoms 12th, and peach 14th.

Lockhart, Texas.—Northers 2d, 7th, 17th, 19th; birds sing, plum and peach blossom 14th. No appreciable rain except on 5th.

New Orleans, La.—Pleasant 8th; peach and plum blossoms 10th; thunder-showers 17th; ice formed 18th to 20th; strawberries in market 22d.

Columbus, Miss.—Peach blossoms 12th; thunder-storms 14th, 15th; ice 1.5 inches thick 21st; heavy thunder-storms 22d, 26th.

Marion, Miss.—Pewee 2d; daffodils 3d; violets 15th; sleet, ground froze 18th, 19th, 20th; thunder and lightning 22d, 26th.

Philadelphia, Miss.—Thunder-storm, high wind 15th; hail 17th.

Brookhaven, Miss.—Frost 1st; ice 2d; thunder and lightning 3d; peach and plum blossoms 6th; corn planting 15th; at 4 p. m., 17th, wind changed to northwest, and mercury fell 35° in one hour, with rain and sleet; wind all night, ground frozen 18th; ice 19th, 21st; pleasant, birds nesting 27th.

Natchez, Miss.—Thunder, rain all day 3d; frost 8th; ice 18th; cold 20th, 21st; thunder-showers 22d; martins 27th.

Elizabethton, Tenn.—Willows leaved 17th; frosts about 20th.

Clarksville, Tenn.—Rain, then snow 7th, till a. m. 8th; rain, sleet, snow, high wind 17th.

Trenton, Tenn.—Very large flaked snow, rain 17th; two inches ice, and ground frozen five inches, 21st.

Memphis, Tenn.—Rain, snow all day 7th; thunder peals, lightning, hail, torrents of rain 14th; rain, gale, snow 17th; cold high wind 20th; heavy rain all day 22d; rain, thunder, lightning, gale 26th, gale 27th.

Pine Grove, Ky.—Snow 7th; rain, thunder, lightning, hail 14th; rain, hail, snow 17th; snows 18th, 19th, 20th. Month's snow 15 inches.

Shelby City, Ky.—Snow 7th, 8th, 14 inches; thunder and lightning 14th; skating 21st; heavy gale 27th. Month 4° colder than its average for ten years.

New Lisbon, Ohio.—Crows, robins 16th; heavy snow-storm 18th. Streams not frozen over this winter.

Salem, Ohio.—Hard month on wheat; late sown much injured.

Cleveland, Ohio.—River frozen over 4th; snow and rain storm 17th.

Williamsport, Ohio.—Heavy thunder-storm 14th; ground frozen 4½ inches 24th.

Hillsboro', Ohio.—Snow 3 to 4 inches 2d; rain, 4 inches snow 17th.

Toledo, Ohio.—A pleasant month. Autumn of 1869 3.34° colder, and this winter 2.78° warmer, than the average of nine years.

Bowling Green, Ohio.—Aurora a. m. 12th; northeast snow-storm night of 5th and all 6th; first February rain 17th.

Urbana, Ohio.—Snow on ground 1st to 7th and 17th to 27th; thunder 14th. Month 7° colder than its average for eighteen years.

Jacksonburg, Ohio.—Aurora 1st; robins 13th; thunder-storm 14th; rain, hail, snow 17th; thunder, southwest, 26th.

Cincinnati, Ohio.—Snow-storm 8 p. m. 17th to 10 a. m. 18th.

Detroit, Mich.—Rain, snow 17th; freezing rain 26th, 27th.

Adrian, Mich.—Violent winds, never nearer than six miles south and forty miles north of this place; the kingfisher remains here all winter.

Alpena, Mich.—Bright aurora 11th; southeast snow-storm 11th; northeast frosty snow 19th, 20th; icy drifting snow from east, 7 inches, 26th, 27th.

Litchfield, Mich.—Good wheeling nearly all the month.

Grand Rapids, Mich.—Sunny, mild month; "cold snap" 20th and 21st, did no damage here.

Northport, Mich.—Snow 1st; skating 4th; ice nearly gone 12th; air full of frost 19th, 20th; coldest day in several years 22d; stormy all 27th.

Copper Falls, Mich.—Very late and severe snow-storms 17th and 18th, 26th and 27th; month's snow fall, 47.5 inches.

Ontonagon, Mich.—Not much ice on lake, but 4 feet snow on land—the greatest depth in many years.

Homestead, Mich.—Faint aurora 11th; severe northeast snow-storm 19th; coldest days since January, 1864, 21st, 22d.

Aurora, Ind.—Thunder-shower 14th, lightning 27th.

Vevay, Ind.—Auroras, 1st faint, 6th brilliant; swallow 4th; plowing 5th; 2.5 inches snow 7th, 8th; birds singing 13th; thunder-showers 14th; rain, 5 inches snow, high wind 17th, 18th; robin 20th; coldest day 21st; crow blackbird 24th.

Spiceland, Ind.—Red aurora, a. m. 1st; heavy thunder, light rain 14th, 17th; snow 19th.

Laconia, Ind.—Snow, 6.5 inches, 8th; thunder and lightning 14th; thunder 17th, 26th. Peaches killed.

Columbia City, Ind.—Robins 25th, crows a few days earlier.

Knightstown, Ind.—Pigeons 4th; thunder-shower 14th; rain, sleet, snow 17th; bluebirds 23d.

Rensselaer, Ind.—Aurora 23d; robins, bluebirds, 26th; severe snow-storm 27th. First half of the month mild, without rain or snow; last half from intense cold to spring-like.

Merom, Ind.—Lightning and thunder 14th, 17th, 26th.

New Harmony, Ind.—Snow, 4.5 inches, 7th; thunder-storm 14th; another, then sleet, then 7 inches snow, 17th.

Near Chicago, Ill.—Sunny days 1st to 4th; snow 17th, 19th; rain 26th; snow and rain 27th, 28th.

Marengo, Ill.—Winter mean temperature 22.84°; rain-fall 5.47 inches.

Mattoon, Ill.—To 16th pleasant; thunder-storm 16th; snow 17th; 7 inches ice on ponds after 20th.

Aurora, Ill.—Pleasant month; 2 feet frost in ground, and 2 inches snow on ground 28th.

Louisville, Ill.—Blackbirds, wrens, doves, 11th; redbirds, larks, 15th; heavy thunder-storm 17th, and showers 25th.

Golconda, Ill.—Frogs 15th. Backward month, no plowing nor seeding.

Belvidere, Ill.—Bright auroras 1st, 11th; greatest cold since December 12, 1868, 20th; except two days, not severe, and quite dry, till 26th. Month's means—1868, 17.35°; 1869, 25.32°; 1870, 22.98°. Winter's means—1868, 16.93°; 1869, 23.81°; 1870, 22.66°.

Sandwich, Ill.—Beautiful vermilion and orange aurora 11th; thunder-shower, warm, 26th.

Ottawa, Ill.—Snow-storm 19th; thunder-storm, high wind, hail, 26th; snow 27th; snow-storm 28th.

Decatur, Ill.—Winter thunder hail-storm 16th; at 2 p. m. mercury at 52°; in 30 hours at 10°.

Winnebago, Ill.—Brilliant aurora 11th; thunder-showers 26th; rain, snow, 27th; snow 28th.

Tiskilwa, Ill.—Aurora 1st; wild geese to south 16th.

Hennepin, Ill.—Wild geese to north 15th. Month generally mild. Northwest storm 19th; mercury fell from 12° to below 5° by 20th.

Dubois, Ill.—Bluebirds 4th; violent snow-storm 17th; doves cooing 24th. Month 1.5° warmer than average of five years.

South Pass, Ill.—Pigeons to north 9th, and geese 10th; quails call 14th; thunder-showers 14th, 26th; rain, hail, snow, mercury fell 27° in a few hours, 17th; peaches killed 20th; robins 28th.

Manchester, Ill.—Red and white aurora a. m. 1st; thunder, west, 16th, with heavy rain, north, 26th.

Mount Sterling, Ill.—Thunder-storms from southeast 16th, southwest from 26th.

Andalusia, Ill.—Thunder-storm 26th; driving snow all day 27th. Month dry and mild.

Sturgeon Bay, Wis.—Rain, snow, strong wind, 17th; aurora 20th.

Plymouth, Wis.—Aurora 11th; lightning 26th. Average temperature of six years, 21°. A pleasant month, with general good sleighing.

Hingham, Wis.—February snow 5 inches, rain half an inch. Mildest winter in twenty-two years.

Milwaukee, Wis.—Sleighing gone 11th; gale 12th; snow 14th; rain all last night 27th.

Embarrass, Wis.—Auroras 20th, 23d, bright 11th; brilliant meteor in the south 28th.

Geneva, Wis.—Strong northwest wind all night 12th, and at 4 a. m. mercury fell from 36° to 9°.

Mosinee, Wis.—Gale 11th, lightning 26th. Two feet snow in the woods; beautiful logging season.

Baraboo, Wis.—Finest February known here; good sleighing.

St. Paul, Minn.—Mean of month, 17.79°; of winter, 17.79°—only four Februaries and four winters warmer.

Minneapolis, Minn.—Good sleighing all month; ice in the river 26 inches thick.

Koniska, Minn.—Pleasant month; ice 2 feet thick.

New Ulm, Minn.—Auroras with streamers 1st, 23d.

White Earth, Minn.—Remarkable storm 11th; wind changed from south to east, and round by north to northwest, from 7 a. m. to 2 p. m., driving fine snow with great force. The mercury fell from 24° to 2°. The storm lasted till 8 p. m.

Clinton, Iowa.—Uniform mild month; few cold days.

Waukon, Iowa.—Auroras 11th bright reddish, 24th faint; thunder-storm 26th; snow 27th, 28th.

Guttenburg, Iowa.—Thunder and lightning 27th. Winter mild but unhealthy; ice 15 inches thick.

Independence, Iowa.—A mild month and winter.

Algona, Iowa.—Sharp lightning and heavy thunder 25th.

West Bend, Iowa.—Aurora 1st. Pleasant month; sudden changes.

Boonsboro, Iowa.—Month 2.60° above average of fourteen years.

Mineral Ridge, Iowa.—Aurora 1st; smoky 7th, 13th, 22d to 25th; the warmest winter in 11 years.

Fontanelle, Iowa.—Bright aurora 11th; smoky 20th to 26th; pleasantest February in many years.

Logan, Iowa.—Month bland as April; no storms; dry roads.

Woodbine, Iowa.—Month variable; roads dusty; winter pleasant; few cold days—the coldest, January 17th.

West Union, Iowa.—Sleet, aurora, 1st; first freeze this year, thunder-storm, 24th; snowing all a. m. 28th.

St. Louis, Mo.—Lightning, thunder, rain, 16th; violent rain and hail storm 26th.

Allenton, Mo.—Thunder-storms, lightning, 16th, 26th.

Hematite, Mo.—Wild geese 2d; robins mating 10th, (were here all winter;) goldfinches 16th, buzzards 17th, larks 21st; thunder-storm, high wind, 26th; very dry and much smoky weather—like Indian summer.

Rolla, Mo.—Snow, rain, 7th; bluebirds 8th; thunder, rain, snow, cold, 17th; thunder-shower 26th.

St. Joseph, Mo.—Two snow and one rain sprinkles this month; ground frozen three feet 24th.

Atchison, Kansas.—Warmest February in six years, and dry; Missouri River open all winter.

Leavenworth, Kansas.—Getting cold 18th; mercury fell 58 degrees in 39 hours, and peaches killed by 20th.

Paola, Kansas.—Wild geese 4th; plowing 14th; robin, woodpecker, 16th. One snow flurry this month—no rain.

Baxter Springs, Kansas.—Month very dry; pleasant; but one cold day, when ground froze 4.5 inches; wheat looks well; oats sowed. Month 1.33 degrees warmer than last year.

Lawrence, Kansas.—Bluebirds 1st; robins 11th. Fine dry month; plowing three out of four weeks.

Holton, Kansas.—Bluebirds and pewees 28th. Dryest February known here. Peach crop safe yet.

Kansas City, Kansas.—Ground frozen 7 inches 1st; free by 10th, and river open. No rain or snow worth naming since Christmas.

Neosha Falls, Kansas.—Frogs 8th; prairie chickens cooing 10th. Very warm, pleasant month; ice crop a failure.

Manhattan, Kansas.—Wind changed southwest to northwest 16th, and in three hours mercury fell from 60 to 25 degrees. Plowing after 10th.

Council Grove, Kansas.—Splendid weather; peaches safe—buds swelling.

Crawfordsville, Kansas.—Month pleasant; ten days smoky; much plowing done; fall wheat looks well.

Omaha Agency, Nebraska.—Pleasant month; cold about 20th.

Blair, Nebraska.—Aurora 1st; mocking birds 7th; month clear, dry, warm.

Bellevue, Nebraska.—Month 1.9° and winter 2° warmer than last year.

Nebraska City, Nebraska.—River opened 11th; wild geese 12th; ground frozen twenty inches 18th; blue jays 25th.

Great Salt Lake City, Utah.—Pleasant month; little snow, two rainy days.

Harrisburg, Utah.—Fine farming weather—fields and fruit trees promise an abundant harvest.

Monterey, Cal.—Slight earthquake southeast to northwest, one to two seconds, 17th.

Watsonville, Cal.—Willow blossoms 3d; lilac in leaf 5th; frogs 12th; earthquake, fifteen to twenty-five seconds, 17th; pears blossom 25th. Crops never looked better; late rains have saved the stock in Southern California.

Vacaville, Cal.—Swallows 13th; humming birds 26th.

Visalia, Cal.—Steady rain 12th and 13th, 21st and 22d; frogs 23d.

Deer Lodge City, Mon. Ter.—Warmest February ever known here.

Port Angeles, Wash. Ter.—Northeast winds and clear to 10th; aurora 3d; heavy northwest gale 15th; first ice and snow 16th; rainy and squally 19th to 28th, then clear to close of month.

NOTES OF THE WEATHER FOR MARCH, 1870.

Houlton, Me.—Auroras 4th, 11th, 20th, brilliant 9th and 19th—very brilliant 30th; crows, robins 31st.

Steuben, Me.—Auroras 3d, 20th, 25th, 31st, brilliant 26th; severest snow-storm of the season 17th.

Orono, Me.—Auroras 19th, 20th, 26th, nearly all night 30th.

Williamsburg, Me.—Aurora 20th; wild geese 26th; Snow-fall 19.5 inches.

West Waterville, Me.—Auroras 3d, 21st, 26th, 30th; 14 inches snow with high wind 16th. Month 1.25 degrees colder than March average of six years.

Gardiner, Me.—Auroras 3d, 4th, 24th, 26th, 31st, brilliant 9th, 25th and 30th; fourteen days sleighing ended 15th, and five on 21st. March average heat for 34 years 29.93 degrees.

Lisbon, Me.—One foot snow with severe northeast gale 16th; auroras 25th, 26th, 30th, 31st; frost nearly out of ground 31st.

Norway, Me.—Heavy 36 hours snow-storm 17th, 18th; auroras 19th, 20th, 25th, 26th, 30th; driving snow-storm, rain 28th.

Cornish, Me.—High wind, snow from 2 p. m. 16th to 1 p. m. 18; auroras 20th, 24th, 25th, 30th, 31st.

Cornishville, Me.—Auroras 20th, 25th, 26th, very bright 30th. Average March heat for 40 years, 28.20 degrees. Snow this month 37 inches.

Antrim, N. H.—Snow on 43 days since October 1st; considerable yet on ground; maple sap flowing freely.

Stratford, N. H.—Thirty inches snow in woods; good sleighing; no birds.

Whitefield, N. H.—Great snow-storm 17th; auroras 19th, 25th, 26th, 30th.

Tamworth, N. H.—Cold and rough till 21st; boisterous storms 16th, 17th, 18th; auroras 24th, 25th, 26th, brilliant 19th and 20th; snow in fields 44 inches; in woods 50 inches.

Lunenburg, Vt.—Snow four feet in woods; ice two feet thick.

North Craftsbury, Vt.—Auroras 1st, 3d, 19th, 24th, 25th, 28th, 31st, brilliant 26th and 30th. Pleasant month; less water than in any month in three years.

Newport, Vt.—Auroras 19th, 20th, 24th, 25th, 26th, 30th, 31st; rain, then snow, 22d.

East Bethel, Vt.—Cool and calm 1st to 12th; snow 13th, and gale 16th, 17th; maple sap flowing 29th. Purple linnet the only bird seen.

Woodstock, Vt.—Linnets 29th; very bright aurora 30th. Pleasant month; cloudy, few storms; snow nearly gone.

St. Albans, Vt.—Lake Ontario frozen over in February—first time known. Robins 25th; frogs 29th; wheeling again 31st.

West Charlotte, Vt.—Auroras 1st, 25th, 30th, crimson 11th and 31st; high east wind, some snow and frozen rain 16th; ice flies 27th, (come before the lake opens and leave with the ice;) wild geese 31st.

Panton, Vt.—Auroras 3d, 25th, 31st, brilliant 24th and 30th; driving snow-storm 16th, 17th. Lake open; roads muddy.

Castleton, Vt.—Gale, little snow 16th, 17th; bluebird 29th; auroras 30th, 31st.

Kingston, Mass.—Greatest snow-storm of the winter 11th; bluebirds, wild geese 27th; aurora 30th.

Topsfield, Mass.—Sleighing gone; blackbirds, bluebirds, 25th; auroras 30th, 31st.

North Billerica, Mass.—Hard snow-storm 13th; furious storm, 28th; bluebirds, robins 29th. A cold, stormy month till 29th.

New Bedford, Mass.—Roughest month of the season; grass greening; flowers at different times all winter.

Worcester, Mass.—Furious snow-storm 13th; snowy 16; squally 17th, 18th; auroras 22d, 25th; bluebirds 30; robins 31st.

Mendon, Mass.—Bright aurora 1st; fifteen inches snow 10th; bluebirds 21st; robins 22d; pewees 30th; roads muddy 31st.

Lunenburg, Mass.—Brilliant aurora 30th; good sleighing most of month; average March temperature for thirty years, 34.16°; for 1869, 20.08°; this month 30.4°.

Amherst, Mass.—Violent wind p. m. and all night 27th.

Richmond, Mass.—Lightning 1st; high northeast wind and snow 13th, 16th.

Williamstown, Mass.—Furious northeast snow-storms 13th, 16th; auroras 19th, 30th, 31st; bluebirds 21st; robin 24th; purple finch 26th; woodcock 31st.

Hinsdale, Mass.—Heavy snows, high winds 13th, 16th, 27th; auroras 19th, 25th; a severe wintry month.

Newport, R. I.—Snow, rain, hail, sleet, with high wind 13th; rain with strong gale 27th.

Columbia, Conn.—Bluebirds, robins, blackbirds 2 th.

Colebrook, Conn.—Severe snow-storms 7th, 13th, 16th, 27th.

Moriches, N. Y.—Auroral light 1st, 21st, 25th; gale, some rain 16th; bluebirds 22d; wild geese 28th; robins 30th. Cold March; two severe storms on 13th and 27th, both Sundays.

South Hartford, N. Y.—Auroras 1st, 2d, intense red 19th.

Poughkeepsie, N. Y.—Auroras 22d, 25th, 31st, red 19th, white 21st.

Garrison's, N. Y.—Auroral light 25th; cold, snowy month.

New York City.—Auroras 8th, colored beams 21st, white 25th and 30th; misty rain, snow 12th, 13th; snow, rain 16th, snow 17th.

Cooperstown, N. Y.—Robin 15th, (one seen in January;) gale of 27th not very severe here; a foot of snow in woods on 31st.

Gouverneur, N. Y.—Nearly a foot of snow 13th; bluebirds 14th; robins 31st.

North Hammond, N. Y.—Driving snows all day 13th, 16th 17th, 27th; crows 16th; maple sugar 29th; blackbirds 30th.

Houseville, N. Y.—Snow, twenty-eight inches 13th; hard snow squalls 16th, 17th; auroras 24th, 26th, 31st; snow with gale 27th; robins 31st.

Leyden, N. Y.—Auroras 1st, 25th, 30th, 31st; seventeen inches snow 13th, seven inches 16th; bluebirds 25th; thrush 31st. Snow gone; no freshets.

Utica, N. Y.—Auroras 6th, 23d, 24th, bright 1st, 25th, 30th, 31st; snow all day, strong southeast wind 16th; gale all 27th; robin 30th.

South Trenton, N. Y.—Beautiful aurora 25th; robin 29th; bluebird 30th; wild geese 31st. Snow on fifteen days, (25.5 inches but drifted, poor sleighing,) now fifteen inches in woods; rain on five days.

Cazenovia, N. Y.—March snow fall 61.25 inches on sixteen days.

Depauville, N. Y.—Auroras 1st, 4th, 24th, 25th, 29th, 30th, 31st; severe snow, seventeen inches, 13th, another 16th, 17th, (banks six feet.) Month 3.1° below average of six years, and 1.2° above mean of last March.

Palermo, N. Y.—Severest snow-storms of the winter 12th and 13th, 16th; east gale all 27th; robins 29th; bluebirds 30th; blackbirds 31st.

Nichols, N. Y.—Snows, six inches 7th, six inches 13th, two to three

feet 16th, (deepest known here;) bluebirds, robins 28th; two feet snow in woods 31st.

Newark Valley, N. Y.—Very heavy snow-storm 13th; deepest snow known here 17th; coldest week of the winter 13th to 20th.

Little Genesee, N. Y.—Bluebirds 12th; bees 30th; creeks open 31st.

Suspension Bridge, N. Y.—Sleighing all month, except 26th, 31st.

Buffalo, N. Y.—Cherry birds 5th; robins 12th; sixteen inches drifted snow from 8 p. m. 15th, to 4 p. m. 17th; bluebirds 24th; month stormy; 2.5° colder than average of twelve years, and 20.5 inches more snow.

Paterson, N. J.—Snows, six inches 7th, 1.5 inches 13th, two inches 16th, three inches 17th.

Newark, N. J.—Wintry month, 1.25° colder than January, and 3° colder than the March average of twenty-six years; warmest March, 48.90°, 1859; coldest 32.54°, 1863. The storms of 16th and 27th were with heavy gales and very high tides.

New Germantown, N. J.—Plowing, sowing oats 26th; snow gone 27th.

Newfield, N. J.—Crows 1st; ground frozen two inches 4th; blackbirds 6th; three inches snow 7th; rain, high wind 13th, 16th, 27th; ground sparrow 16th; flickers, larks 30th.

Greenwich, N. J.—Storing two-inch ice 5th; 3.5 inches snow 7th; heavy rain, with snow 13th, with high winds 16th, 27th; oats sown 29th.

Vineland, N. J.—Rain, snow 13th; high wind, rain 16th, 27th.

Nyces, Pa.—Snow plenty; ground frozen six to eight inches; robins and bluebirds come, look, and leave again.

Hamlinton, Pa.—Cold, blustering month; more sledding than in winter.

Dyberry, Pa.—Snow, hail 12th, 13th; ten inches drifting snow 16th; robins 21st; two feet snow in March; eighty inches this season.

Fallsington, Pa.—Severe rain, hail, sleet, snow 12th, 13th; rain and wind storms 16th, 27th; frogs, robins, blackbirds 21st.

Philadelphia, Pa.—Snows, light 2d, heavy 6th; heavy rain all day 27th, lighter 28th.

Horsham, Pa.—Frogs, blackbirds 30th; oats sowing 31st.

Plymouth Meeting, Pa.—Snow 6th, 7th; severe sleet storm 13th; violent wind, rain 27th; ground frozen till 20th.

White Hall, Pa.—Snows, six inches 7th, two inches 8th, two inches and hail 13.5 inches 16th, with rain 27th; bluebirds 19th.

Factoryville, Pa.—Snows, six inches and rain 13th, with stormy wind 16th, with east gale and rain 27th; bluebird 26th; mud 31st.

Reading, Pa.—Snow, rain, hail, 12th; high wind 13th; gale, rain, 27th.

Parkersville, Pa.—Smoky 19th to 27th (six days) and 30th, 31st.

Ashland, Pa.—Great storm 27th, houses rocked like cradles.

Ephrata, Pa.—Terrible sleet and snow 12th, 13th; east storm, rain, 16th; snow, rain, 27th; frogs 19th; pewee 25th.

Carlisle, Pa.—Sleet, snow, rain, 13th; plowing 25th; sleet, rain, high wind, 26th, 27th; blackbirds, robins, 29th. Oats not yet sown; roads bad.

Fountain Dale, Pa.—Sleet, snow, 13th; great east snow-storm, then high west wind, 16th; east rain-storm 27th. A stormy month.

Tioga, Pa.— Good weather and sleighing to 15th; severe storms, snow, 16th; snow, sleet, rain, 27th; robins 24th; bright aurora 30th.

Grampian Hills, Pa.—Snows, 13th, 28th, ten inches 16th, with rain 27th; thirty-one inches of snow in March, and ninety-three inches since November 1, 1869.

Johnstown, Pa.—One foot snow 15th, 16th; rain all 27th.

Franklin, Pa.—Alleghany River open all winter.

Pittsburg, Pa.—Thunder-storm 12th; snow, high wind, 13th; hard freeze 25th; rain, night of 26th, with high wind 27th.

Brownsville, Pa.—Robins 10th; hail, thunder, lightning, snow, 12th, 13th; three inches snow 16th. A cloudy month, and backward.

New Castle, Pa.—Rough, wintry March; only three clear days.

Canonsburg, Pa.—Robins 5th; bluebird 14th; blackbird 25th; strong southwest wind 26th. Snow on nine days.

Milford, Del.—Thunder and lightning 16th; wild geese 20th; freeze 25th, 26th; east rain-storm 27th.

Emmittsburg, Md.—Gale in night, trees coated with ice, 13th; heavy snow-storm last night, 16th. March and January same mean temperature.

Johnsontown, Va.—Snow, rain, 6th; heavy thunder-shower 16th; ground frozen 24th; gale, rain, 26th; dandelions 30th.

Hampton, Va.—Blossoms, peach 20th, wild plum 25th. Seventeen frosts in month, which was 1° colder than last March.

Zuni Station, Va.—Thunder-storms 12th, 16th; auroras 13th, brilliant 28th. Peaches mostly killed.

Comorn, Va.—Hail 4th; thunder-shower 12th; gale, rain, 16th, 27th.

Vienna, Va.—Frogs 11th; cherry and peach blossoms 28th.

Piedmont, Va.—High wind, snow, 16th; thunder-showers 21st.

Snowville, Va.—Light snows 6th, 7th, 8th, 16th 27th; showers 11th, 12th.

Wytheville, Va.—Furious wind 13th; snowy 16th, 17th. A cold, wet month; no oats sown; wheat looks promising.

Chapel Hill, N. C.—Rain, hail and sleet, and freeze, 6th.

Albemarle, N. C.—High winds, rain, thunder, 12th, 13th; cold, high wind 16th; peach in full bloom 17th; pear on 30th.

Statesville, N. C.—Rain froze on trees 6th; ground white with snow 16th.

Holland's Store, S. C.—Wild plums blossom 2d; thunder-storms 12th, 30th; peaches nearly all killed 21st; great freshet 31st.

Gowdeysville, S. C.—Light snow 16th. March cold, spring backward.

Fort Mill, S. C.—Cold wet March, heavy floods.

Bluffton, S. C.—Orange trees hurt by black frosts in February.

Berne, Ga.—Thunder-storm with hail 7th; with rain and gale 12th; gale 27th, 28th, 29th.

Rockville, Ala.—Ground frozen 8th; pear blossoms 13th; ice half an inch thick 16th; mocking bird 18th; apple blossoms 21st.

Coatopa, Ala.—Martins 12th; ice 16th; heavy frost 18th.

Fish River, Ala.—Frosts 9th, 17th, 18th, 19th; heavy rain 24th, 25th.

Jacksonville, Fla.—Gardens and crops in good condition.

Pilatka, Fla.—Severe frost 19th; severest gale and rain in many years, from p. m. of 23d to night of 25th; month 3° colder than last year.

Bremond, Texas.—Corn and peaches killed by freeze 15th; corn replanted 26th; stock doing well on grass 31st.

Oakland, Texas.—Frost 13th, 31st; ice 15th, killed cotton and corn.

Lockhart, Texas.—Corn, &c., killed 15th, 16th; copious thunder-showers 21st, 24th. But little planting done yet.

Clinton, Texas.—Frosts, slight, 13th, 31st; severe 16th; ice 15th, 16th; thunder-storms 21st, 25th.

Austin, Texas.—Violent northwest wind, thunder, lightning, little rain, 12th; frosts 13th, 16th; thunder, lightning, 24th, 25th.

New Orleans, La.—Ice 9th, 16th; frosts 10th, 18th.

Columbus, Miss.—Frosts 8th, 9th, 10th, 16th, 17th, 18th, many peaches killed; apples and pears safe. Coldest March in sixteen years.

Marion, Miss.—Peach crop killed by frost and ice 8th to 18th.

Brookhaven, Miss.—In summer night-rains are rare; from March to June it rains only in the night. *Near Brookhaven, Miss.*—Wild geese 2d; frost 8th, 9th, 10th; ice 8th, 9th, 10th; strawberry blossoms 23d; martins 25th.

Natchez, Miss.—Severe thunder-storm, wind, hail, 12th; cold, frosty, 13th to 19th; heavy thunder-storm 25th.

Elizabethton, Tenn.—Wild geese 15th; barn swallow 28th.

Clarksville, Tenn.—Strong gale 12th; barometer lowest ever known here, except in January, 1867.

Trenton, Tenn.—Less wind and more rain than usual.

Memphis, Tenn.—Heavy thunder-storm and gale 12th; thunder-storm, then severe gale and snow, 15th.

Pine Grove, Ky.—Snow 1st; hail, snow, rain, 3d, 6th; violent thunder-storm, hail, gale, 12th; rain all 30th, 31st.

Shelby City, Ky.—Furious gale, thunder, lightning, rain, hail, 12th. Month 5.5° colder than its average for ten years.

New Lisbon, Ohio.—Snow-storm 2d; rain and snow 4th; heavy fall of snow 27th. River not yet frozen over.

Salem, Ohio.—Robin 11th; bluebird 20th. No plowing done.

Painesville, Ohio.—Robins 15th; rivers free of ice 20th; bluebirds 21st.

Cleveland, Ohio.—Lowest barometer in twelve years 13th; robins 15th; pigeons 25th; rain, then snow, 27th.

Oberlin, Ohio.—High wind and snow-squalls 17th; first thunder and lightning 20th; only clear day 24th.

North Fairfield, Ohio.—Rain, noon 26th to 5 p. m. 27th, then snow; rain all 31st. Peaches uninjured; fruit prospect good.

Gambier, Ohio.—Pigeons, crows, 10th; lowest barometer in several years 12th; frogs 20th.

North Bass Island, Ohio.—Sleet, rain, hail, snow, 3d, 12th, 27th; ice on Lake Erie broken up 29th to 31st. Snow on 13 days.

Hillsboro, Ohio.—Rain, snow, high wind, 12th; rain all 26th, 27th, 31st.

Toledo, Ohio.—Severe northeast snow-storms 11th and 12th, 15th; severe northeast rain-storm 30th and 31st.

Urbana, Ohio.—Month 2.5° above average of eighteen years.

Jacksonburg, Ohio.—Snow-storms 8th, 12th, 16th; violent 15th; thunder-storm 12th; aurora 21st. Coldest March since 1843.

Cincinnati, Ohio.—Severe snow and gale 15th; heavy snow 16th.

Detroit, Mich.—Sleet, snow, rain, 12th, 13th; lightning, rain, 20th; robins 20th; jays 23d; frogs 29th.

Adrian, Mich.—No violent storms in March; good fruit prospect; spring promise good.

Litchfield, Mich.—Aurora 10th; wind, rain, and deepest snow since October 2d, 15th; bluebird 23d; roads muddy 31st.

Northport, Mich.—Robin 28th. An equable, quiet month.

Muskegon, Mich.—Eighteen inches snow 12th, 13th.

Copper Falls, Mich.—Very mild March; northeast winds were warm more than half the month.

Benzonia, Mich.—Cold rain and storms last half of month.

Aurora, Ind.—Aurora 21st; rain all 26th; martins 31st.

Vevay, Ind.—Rain, sleet, snow, 6th; thunder-storm, snow, 12th, mercury fell from 60° to 28° by 13th; snow-squalls 16th; rain all 26th; high wind 27th.

Spiceland, Ind.—High wind, heavy rain, thunder and lightning, 12th; lowest barometer ever known here.

Laconia, Ind.—Thunder-showers, sleet, snow, gale, 12th; mercury 66° at 4 p. m., 32° at 9 p. m.; snow all 16th; aurora 21st; martins 29th.

Indianapolis, Ind.—Rain, thunder, lightning, 11th, 12th; heavy snow with west and southwest wind, 15th.

New Harmony, Ind.—Heavy thunder-storm, snow, 11th; and lowest barometer in eighteen years 12th; snow 15th and all 16th.

Marengo, Ill.—Great snow-storms, eight inches, 12th; 5.5 inches 15th; rain, snow, sleet, 20th; larks 23d; blackbirds 25th.

Louisville, Ill.—Hail, thunder, lightning, 5th, 12th; frogs 10th; planting potatoes, onions, and peas in March.

Belvidere, Ill.—Month moderate, some plowing done.

Mineral Ridge, Ill.—Hail, sleet, thunder, lightning, high wind, 11th; furious snow-storm 14th, 15th and 16th.

Ottawa, Ill.—Wild geese 9th; robins, bluebirds, 10th; rain, snow, 11th, 12th, 13th, 19th, 20th; rain 25th, 26th, 27th.

Winnebago, Ill.—Snow-storm 11th, 12th, 13th; heavy snow 15th; rain, thunder, snow, 20th; robin 24th; bluebird 25th.

Rochelle, Ill.—Great snow and rain-storm 11th, 12th.

Wyanet, Ill.—Great storm, freezing rain, hail, snow, 12th, 13th; drifting snow-storm 15th; spring birds 21st.

Tiskilwa, Ill.—Rain, furious snow, robins, wild geese, 12th.

Hennepin, Ill.—To 9th variable; 11th to 18th wintry; to 31st misty, sunny, muddy. (*S.*)—Larks 10th; sleet 11th; rain, sleet, snow, (freezing on and breaking down trees 12th;) prairie chickens cooing 24th.—(*O.*)

Dubois, Ill.—Heavy thunder 6th; frogs 9th; robins 11th; rain, furious gale, snow, 12th; thunder, hail, snow, 15th; red aurora 21st.

Manchester, Ill.—Thunder, snow-storm, 12th; distant thunder 28th.

Mount Sterling, Ill.—Thunder-storm from south 11th; from southwest 20th; robins 18th. Roads bottomless; intercourse between towns suspended.

Augusta, Ill.—Thunder-shower 11th; severe rain and snow 12th; rain, driving snow, 14th; terrific wind and snow 15th, 16th.

Manitowoc, Wis.—Aurora 21st; robins 26th; blackbirds 30th.

Hingham, Wis.—Aurora 21st. Snow of winter seventy-six inches.

Milwaukee, Wis.—Snow began at St. Louis 8 a. m., here 6.30 p. m., 3d; at St. Paul last evening, here 11.30 a. m. 11th; snow all 12th, 15th; auroras 21st, 22d; ice left Milwaukee River 30th.

Embarrass, Wis.—Aurora 1st; great snow and wind 15th; blue crane, crows, 21st; bluebirds 23d; willow blossoms 29th.

Mosinee, Wis.—Crows 1st. Deep snow hinders logging and sugar making.

St. Paul, Minn.—Rain on five days, twenty inches snow on eight, and nine fair days in March. Winter snow fifty-three inches, and one hundred days of sleighing.

Minneapolis, Minn.—Terrible snow-storm 14th, 15th, 16th; sleighing ended 27th, after ninety-five days.

Koniska, Minn.—Snow, mixed with dark sand or ashes, 10th; river opened 26th; bluebirds, ducks, wild geese, 27th.

New Ulm, Minn.—Heavy snow all 15th; river opening 31st.

Madelia, Minn.—Geese 26th; ducks 30th; Watonwan River open 30th. March snow 30.75 inches.

Missouri Valley, Iowa.—Thunder, snow-storm, 3d; great snow-storm 12th, 13th, 14th. Late spring; no wheat sown yet.

Sioux City Iowa.—Snow-squalls, hurricane, 14th, 15th, 16th; two persons and many cattle perished in it in this vicinity.

Clinton, Iowa.—Severe gale, rain, snow, 11th, 12th; severest gale and snow since January 1st, 1864, 15th; thunder 20th; robins 23d.

Waukon, Iowa.—Severe snow-storms 11th and 12th, 14th and 15th, some twenty-five inches in all, badly drifted; robins 25th; bluebirds 28th.

Bowen's Prarie, Iowa.—Severe gale and snow 11th. Very little plowing done; not one cloudless day in March.

Fort Madison, Iowa.—Freezing rain 12th; severe drifting snow 14th, 15th; equinoctial storm 21st; very bad roads 30th.

Guttenberg, Iowa.—Worst month for cattle this winter; slush and mud since 19th; snow all gone; no freshets.

Independence, Iowa.—Gale, rain, snow, hail, 11th, 12th; furious snow, rain, 14th, 15th; rain, snow, 19th, 20th. *Near Independence.*—Heavy snow 15th; geese 26th. Less wind in March than for several years.

Waterloo, Iowa.—More snow than in January and February.

Rockford, Iowa.—More snow and drifting than all winter 11th, 12th; more snow yet, and worse drifting 14th, 15th.

Iowa Falls, Iowa.—Thunder, hail, snow, 11th, 12th; snow, rain, sleet, high wind, 15th to 18th; aurora 25th; spring birds 27th.

Ames, Iowa.—Rain, hail, snow, 11th, and with worse wind 14th, 15th.

Algona, Iowa.—Snows all day, six inches, 3d, six inches 11th, fearfully furious 14th, 15th, 16th, during which many persons in this State and Minnesota perished, also many cattle.

Boonesboro, Iowa.—Thunder-storm of hail, snow 12th; hurricane with snow 14th, 15th. Month 6.5° below the average of thirteen years, and 13° below March of 1868.

Fontanelle, Iowa.—Sleet, great snow-storm 14th, 15th, 16th.

Grant City, Iowa.—Snows, four inches, 13th, and with rain and gale 14th, 15th, 16th, in which many people, cattle, and sheep perished.

Logan, Iowa.—Thunder, snow-storm, 11th; terrible snow and wind of seventy-two hours, 14th, 15th, 16th; mercury fell to 7° below zero, and many lives were lost.

Woodbine, Iowa.—Thunder, snow-storm 11th; three days driving snow 14th, 15th, 16th; spring birds 25th.

West Union, Iowa.—Auroras 1st, 9th, 27th; drifting snow 12th; deepest snow of the winter 15th.

St. Louis, Mo.—Rain, snow, high winds, thunder, lightning, 12th; rain, thunder, lightning, 14th; snow, high winds 15th; high winds, snow, hail, 16th.

Allenton, Mo.—Thunder-storms 12th, 29th; barometer 28.430 on 12th, lowest in thirty-four years.

Hematite, Mo.—Yellow crocus 2d; thunder-shower, snow, 12th; wrens 15th; grasshoppers 18th; aurora 21st; hail 29th.

Rolla, Mo.—Thunder-shower 11th; freezing rain, high wind, severe snow-storm, 12th; thunder, freezing rain, snow, 14th; light snow, frosty, 16th; thunder, rain, hail, 29th.

Jefferson City, Mo.—Lightning, rain, 11th; rain, heavy snow, 12th; thunder-storm from south 29th.

Kansas City, Mo.—Springs low, ground dry, oats sown.

St. Joseph, Mo.—Thunder, little rain, heavy wind, 11th.

Oregon, Mo.—Wild geese, robins, 8th; great storm 9 a. m. 14th to 5 p. m. 16th; auroras 20th, 21st, 22d. Peaches yet safe.

Atchison, Kans.—Thunder and lightning 3d, 19th; with rain 28th. Missouri river open all winter.

Paola, Kans.—High winds 3d, 10th, 11th; very cold 14th, 15th; frogs 11th; larks 17th; gale, thunder-shower, 28th; copious rain 29th.

Lawrence, Kans.—Kansas river closed 15th; opened 17th.

Holton, Kans.—Martins 11th; gale 12th; snow squall 14th; air full of fine snow 16th; pewee, robins, 26th.

Neosho Falls, Kans.—Very cold, cloudy, windy month; little rain.

Le Roy, Kans.—Smoky 3d to 17th, and 24th to 31st; first flowers 24th.

Council Grove, Kans.—Air full of fine snow 14th; severe cold windstorm 16th; aurora 21st; copious rain 28th.

Crawfordsville, Kans.—Thunder, dry, 10th; snow 12th; showers 28th.

Omaha Agency, Neb.—Snow, drifting, 14th; more violent 15th; ceased 16th; snows 28th, 29th.

De Soto, Neb.—Thunder, snow, freezing rain, 3d; thunder, snow-storm, 11th; snow 15th, 16th.

Bellevue, Kans.—Terrific cold wind, snow 14th, 15th, 19th; slight rains 18th, 19th, 24th.

Nebraska City, Neb.—Dusty, bluebirds, 2d; thunder, snow-storm, 3d; roads dry, robins, &c., 11th; snow, high wind, 14th, wind worse, river frozen over, 15th; snow ceased, river crossed on foot, 16th; river open 19th; aurora 21st; sap suckers 27th.

Harrisburg, Utah.—Early March hard frosts, killed peaches, apricots and trees weakened by grasshoppers. Month windy, dry; little snow.

Watsonville, Cal.—Apple blossoms 18th. Season late, but pleasant month; grain looks well.

Cahto, Cal.—Grouse calling 1st; laurel and strawberry blossoms 5th; quails mating 28th.

Deer Lodge City, Mont. Ter.—Wild geese 11th; plowing, bluebirds, 26th; larks, robins, 29th; killdeers 30th. Coldest March since 1867. Much snow on mountains; valleys dusty. No thunder, lightning, hail, nor auroras this month, and no sleighing this winter.

Missoula Mills, Mont. Ter.—Ground frozen nine inches 17th; wild geese 18th; heavy frost 28th; frost out of ground, grass green, stock improving 30th; faint aurora 30th.